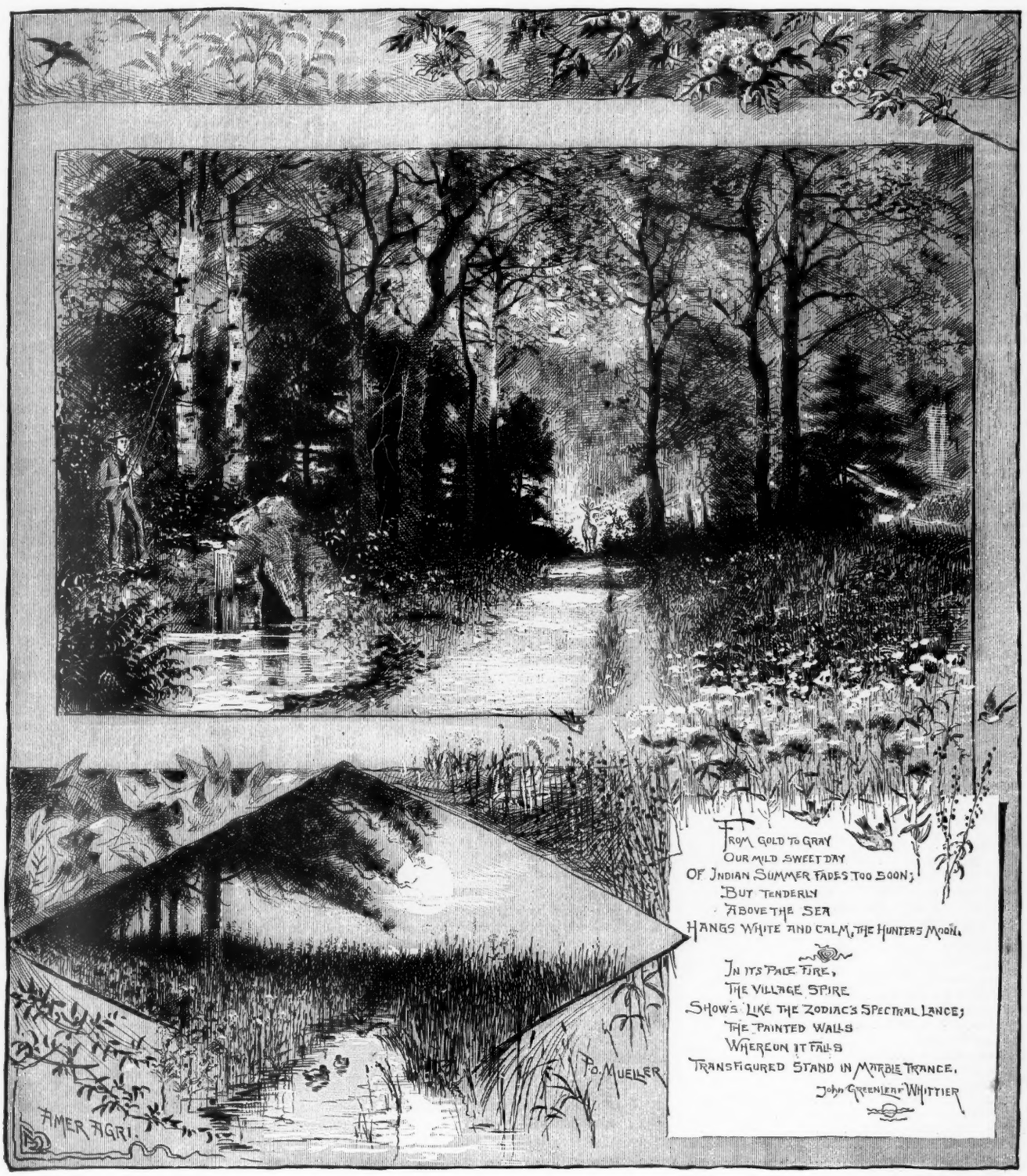
AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

VOLUME XLVI.—No. 10. NEW YORK, OCTOBER, 1887. NEW SERIES—No. 489.



AUTUMN DAYS.

Drawn (by Mueller) and Engraved for the American Agriculturist.

COPYRIGHT, 1887, BY THE O. JUDD CO.

ENTERED AT THE POST OFFICE AT NEW YORK, N. Y., AS SECOND CLASS MATTER.

Contents of this Number.

A B C of Agriculture, No. X.... 412
Agricultural Development in Japan 423
Animal Ailments 423
Autumn Days *Illustrated* 409
Balcony and Veranda Gardening *Illustrated* 430
Basket Items 422–423
Bee Notes for October 411
Bit to Prevent a Horse from Carrying its Tongue Out *Illustrated* 426
Bird Helpers 414
Boys' and Girls' Columns:
The Doctor's Talks 4 *Illustrations* 435
Elsie's Violets *Illustrated* 434
Raccoons, Wild and Tame *Illustrated* 436
Butter, Keeping Quality of 411
Catchflies—Silene *Illustrated* 431
Cattle from Divers Lands *Illustrated* 420–421
Cherries, Native, Two Promising 418
Cistern, Contents of a 430
Colts, When to Wean 422
Corn Meal for Cows 428
Cottage, A Country 3 *Illustrations* 427
Cup for Exhibition Flowers 2 *Illustrations* 429
Cyclamen, The 424
Device for Holding a Load of Hay *Illustrated* 424
Encampment, Farmers' 420
Farm and Garden Work for October *Illustrated* 410
Fattening, Begin Early 426
Fescue, The Tall, and Meadow *Illustrated* 421
Flower Bed Without Flowers *Illustrated* 430
Flower Garden and Lawn 410
Flowers in Water, Forcing 412
Fruit in Great Britain 431
Grapevine in Autumn 429
Grapevine, Training the *Illustrated* 429
Greenhouses for Profit and Pleasure, 5 *Illustrations* 416–417
Greenhouse and Window Plants 410
Horse, The American Trotting *Illustrated* 419
Horses, Hunters and Carriage 425
Horses, Shoeing, For and Against 418
Horses, Work, Care of 419
Hot-bed, Don't Forget it 413
Household, The:
Canaries, Care of 433
Ebonizing Hard or Soft Wood 432
Fan Decorations *Illustrated* 432
Fashions, Early Fall 432
Matting, Ornamental *Illustrated* 433
Recipes for all Seasons 433
Something New 6 *Illustrations* 433
Wardrobe Closet *Illustrated* 432
Windows for Plants, Bay *Illustrated* 432
Insects, Plant Lice on Apple Trees 422
Kitchen and Market Garden 410
Lambs, Profitable 413
Lantern Holder, A Secure *Illustrated* 426
Leaves of Nursery Trees, Stripping 420
Linseed and Cotton-Seed Meal 426
Live Stock Notes 410
Notes from the Pines 428
Orange, The Navel, in Florida 430
Orchard and Fruit Garden 410
Orchard Products 414
Ox-Eye Daisy, Improvement in 422
Pansies, New and Old 2 *Illustrations* 431
Peach Basket, The Modern 417
Pear Stocks, Raising 422
Peas for Milk 411
Phylloxera Laws, in Europe 417
Pineapple Culture in Florida 428
Poultry, Brahma Fowls *Illustrated* 415
Poultry Yard in Autumn 415
Quinces, Harvesting and Marketing 424
Seeds, Forest Tree 429
Sheep, Pure-Bred Lincoln *Illustrated* 425
Soiling in the South 425
Squirrels and the Pears 422
Stacks, Re-top the 427
Strawberry, A New, The Gold *Illustrated* 429
Sturgeon 411
Sweet Potatoes, Harvesting 418
Swine of Lincolnshire *Illustrated* 413
Tail-Holder, An Ingenious *Illustrated* 424
Tomato Season, Prolonging the 415
Ventilation, Stable *Illustrated* 426
Wagon-Jack, A Simple *Illustrated* 426
Water Supply on the Farm 420
Wheat Bran and Malt Sprouts 412
Wheat and its Products in the Mill, II 414
Wheat Seed, Improving 418

See page 437 and onward for Sundry Humbugs, and other Matters of Special Interest to every one of our Readers.

October.

When Spring is but a spendthrift's dream,
And Summer's wealth a wasted dower,
Nor dews nor sunshine may redeem,
Then Autumn coins his golden flower.

OLIVER WENDELL HOLMES.

Renew Now.

Subscribers will confer a favor upon the Publishers by renewing their subscriptions for 1888 at this time instead of waiting until the rush of the closing year, when the reception of large numbers of subscriptions, often thousands a day, sometimes renders delay in entering almost unavoidable.

Of Special Interest.

While this issue of the *American Agriculturist* is specially attractive, the back pages will be unusually interesting to readers generally. The Homes of our Farmer Presidents, Fair Notes, Humbug Exposures, Premiums for new Subscribers, Instructions to Canvassers, etc., etc., are particularly valuable.

FARM · AND · GARDEN · WORK

·OCTOBER, 1887.·

Live Stock Notes.

Pork, beef and mutton can be made now much cheaper than in cold weather, and fattening animals should be pushed forward....Sheep, when they can be bought favorably, turn the straw to good account, especially with the help of a moderate ration of grain. The manure is an important part of the profits in fattening sheep....Cows due to calve in the winter months, should be brought into good condition by feeding roots and bran, to keep the bowels open....If a new stock of pigs is bought, quarantine them before allowing them to go with the herd, for fear of introducing diseases. In fattening do not feed exclusively on corn, but feed refuse fruit, roots and other fresh vegetable food to improve the appetite. Well-fattened pigs of about two hundred pounds weight meet with ready sale to city families....Poultry should have every provision for their comfort and health, if eggs are desired. Do not forget ground or broken bone, shells, and meat, cabbages and other vegetables, as persuaders.

Greenhouse and Window Plants.

Have the greenhouse ready to receive the plants if a sudden cold change occurs. Take in very tender plants when there are cool nights. Give air abundantly at first....*Astilbe Japonica*, *Dicentra* (Bleeding Heart), and other hardy perennials, and *Deutzia gracilis*, *Weigelas*, *Forsythias*, and other shrubs, force readily in the window. Lift and pot them, and keep in the cellar until January or February, to give a needed rest; then bring to the light and give water as needed....Sow seeds of annuals. Lay in needed supplies of earth, etc., as already suggested....When plants are taken in, clean the pots, remove all insects, and trim into shape if needed. If any need repotting, shift to pots a size larger....Plant Hyacinths and other bulbs in pots for forcing, and set in a dark place.

Flower Garden and Lawn.

Prolonging the season, and preparing for winter, will be the chief work. A very slight covering, such as old newspapers, laid over them at night, will carry beds of Geraniums and the exceedingly tender Coleus, etc., through the first frosty nights, after which they will often remain in perfection for several weeks, before killing frosts come....Hyacinths, Tulips and other Dutch bulbs may be planted, covering with soil about their own thickness in depth....Tuberoses that have not flowered in the open ground, may be potted, to complete blooming in the greenhouse or sunny window....Lift Gladiolus bulbs as soon as the leaves begin to fade. Save the small bulbs that are found at the base of the old bulbs....Make cuttings of Geraniums, Heliotropes, Verbenas, and other plants too large for taking up....Cannas should have the tops cut before the frost kills them. Cut off Dahlias when touched by frost. Take up the roots on a warm day; securely label....Save seeds from the best only....Chrysanthemums to be left out should be securely staked.

Kitchen and Market Garden.

Returns from the second sowings will now be coming in, and whether the crops are marketed or consumed on the home table, the gardener will rejoice that he followed the advice to sow succession crops....Celery should now be "handled," by bringing the leaves to an upright position, and holding them there by drawing the earth to them, and pressing this firmly with the hands....Thyme and other herbs should be cut and dried in the shade if for home use, or made into bunches if for the market. Market gardeners cut out every other row, and leave the rest to grow, and fill the space thus left....Spinach may still be sown for use next spring; weed that already up and thin for use....Pick Lima beans as they ripen, and shell for winter use. If frost threatens, take up the poles with the vines, and set under a shed where they may be gathered as wanted....Continue to dry sweet corn....Beets are to be gathered before frosts. Feed the tops to cows. In a compact pile, and covered with straw or boards, they will remain thus roughly ensiloed in a fresh state for a long time. Pack the roots intended for table use in barrels or boxes covered with sand or earth to keep from shrivelling. Treat carrots and other roots in the same way, and pit the remainder. Take up enough parsnips and salsify for winter use, and leave the rest in the ground....Squashes are injured by heavy frosts; if such is threatened, gather them up into a heap, and cover them well with the vines.

Orchard and Fruit Garden.

Harvesting the fruit which still remains on the trees, will be the important work of the month....Autumn pears should be gathered before they begin to mellow. Winter varieties may be left on the trees until there is danger of freezing, when they should be treated the same as winter apples....Grapes intended for the holiday sales should remain on the vines, until the shrivelling of the stem of the clusters shows them to be fully ripe. Pick, handling them by the stems, and lay the clusters in a single layer in trays or drawers, which should be carried carefully to the fruit room, and placed upon racks which will separate them sufficiently to allow of abundant ventilation. The room should be dark, with provision for the admission of cool, dry air. Good keeping grapes may remain in such a room for weeks, and when needed for market will be found well "cured," *i. e.*, the stems dried and the skins much toughened, and will endure the needed pressure in packing in boxes without cracking. The "Concords" should be marketed the earliest, but even this tender-skinned variety will be benefited by "curing."....Manure the orchard. If the trees have yielded a generous crop of fruit, repay them with a generous top-dressing of manure, applied this autumn or next spring. Taking away constantly and returning nothing, is the best way to "run out" an orchard.

Bee Notes for October.

In the Northern States all arrangements for winter should be completed this month; and in the South when the honey flow has ceased. Each hive should have proper absorbing material above and holes in the caps. Give proper ventilation, but contract the entrance so that mice cannot gain admittance, for bees have no greater enemy during the winter than mice, and it is surprising through how small a space they will gain admittance. Unite all small and queenless colonies, make winter passages, by laying small sticks of about one inch in diameter, across the top of frames, under the cushion. Supersede old queens by introducing young ones. It is essential that every stock have a good young queen, this not only avoids the necessity of disturbing the bees in the early spring—when they never should be disturbed—but a young queen will lay earlier than an old queen, and there is no danger of losing her by old age.

Some stocks may have more honey than necessary, while others have not enough. If so, equalize them by dividing with the poorer colony, at the same time see that some empty cells are left upon the bottom of the center combs for the bees to cluster on. If frames are all full it would be well to clean the honey from a comb and place in the center for this purpose. When the weather is very cold it is advisable to make holes through the center of combs, in addition to the cross-sticks, to serve as winter passages. It must also be borne in mind that good wintering depends on plenty of young bees, with a good fertile queen, an abundance of good sealed honey easily accessible, and warmth with proper ventilation. A cotton quilt with three or four thicknesses of batting makes as good an absorbing material as can be used. If this cannot be obtained, take some burlaps and make cushions about four inches thick, and stuff these with chaff or sawdust.

In uniting bees, smoke them thoroughly, and then sprinkle them with some sweetened water. The water may be strongly scented with anis or peppermint. Now shake the bees altogether into an empty box, using the best combs of brood and honey to place in the hive, in which you intend to winter them, then pour the bees on a sheet at the entrance when they will take possession and no fighting will result. Should any boxes have been left on until this month, they should now be removed, nicely cleaned of all pollen, and then packed, as neatly and securely as possible, in crates with glass sides. Do not glass your boxes, as it spoils the otherwise neat appearance of your honey as well as lessens its market value. If you have extracted honey, drain off any thin honey on top of jar. Seal it up as neatly as possible and label with your name and address. If you winter indoors never set bees in until cold weather commences in earnest.

Keeping Quality of Butter.

JOHN GOULD, OHIO.

A subscriber to the *American Agriculturist* writes us that some of his customers complain of his butter not keeping well. He describes his process of manufacture, which does not differ materially from other late methods, except the use of sour buttermilk to hasten the ripening of the cream, and cooling the butter in washing, down to fifty degrees, salting, and packing as soon as the salt has dissolved. The use of souring substances would be objectionable, as it introduces, specifically, an element of ferment, which, though diluted each time, yet must contain very ancient germs. The ripening is described to take place in twenty-four hours, and at a temperature of sixty degrees. It would be better to raise the cream to seventy degrees, stir frequently, and get the development of acidity from the air, just as our best cheesemakers now discard the acid of whey, and get better acidity by keeping the dry curd warm at ninety degrees. The other objection is in cooling the butter down to fifty degrees in washing, which implies that it is salted at that temperature. While salt will readily dissolve at fifty degrees, it is not so easy to get the butter free from the surplus water, and it is by this needless water that much injury is done to butter. Fifty-five degrees would be better, and salt the butter at sixty degrees. Water is a great solvent of caseine and sugar—traces of which will be found in all butter, however well worked—but the more water remaining after working over, the greater the chemical action, and acting upon the minute particles of curd or cheese, it becomes rancid by well known chemical action. Butter should not contain more water than is necessary to dissolve what salt it will retain in the form of brine, and fourteen per cent. seems to be about the amount. More water than this dilutes the brine, and defeats by so much the object of the use of salt in butter—to preserve the caseine from chemical change—nor can this be accomplished save in a temperature below fifty degrees. In the usual creamery butter, and all that made by cold setting, the maker often unintentionally leaves more than twenty per cent. of water in butter, not understanding that butter made from cream slightly acid, retains more moisture than that made from sourer cream. The souring breaks up the texture of the cream, and the butter separates better from the butter milk. Then all the butter-maker needs to do is to churn the ripened cream at a lower temperature than is needed for sour, to use salt each time in washing it free from buttermilk, and when the regulation amount of salt is used to season the butter, let it dissolve, and then by gently working and packing, know that the butter is free from any excess of water above fourteen per cent. Then if kept below fifty degrees, and away from the influence of the air, butter made from soured milk must keep well. Butter, however well made, must be kept under suitable conditions, for increase of temperature has its effect, quite as much as exposure to the air. When one consumer lauds a package of butter as a fine keeper, another with a package from the same churning will complain. This shows that storage has much to do with keeping butter.

The Sturgeon.

SETH GREEN.

This fish is fast becoming extinct, and I dare say that the time will come when mounted specimens will be carried through the country along with other curiosities which usually accompany a menagerie. The sturgeon, as many of the readers of the *American Agriculturist* undoubtedly know, is the largest species of fish that inhabits the fresh water lakes of this country. It grows to a length of six feet, and in some instances more, and frequently weighs over a hundred pounds. It is also found in the large rivers flowing into the ocean, and there attains a greater size than the fresh-water variety. I have heard of specimens weighing as heavy as four hundred pounds. During summer it is a great sight to see sturgeons leaping from the water. They come straight up, and look at a distance like great logs shooting up full length above the surface of the water. This they do, without doubt, for their amusement, as, by the peculiar construction of their mouths, they cannot obtain their food from the surface as do many kinds of fish, and I can, therefore, assign no other cause for this strange action. Their mouth is located on the under side of the head, and is toothless. They obtain their food by means of suction; that is, they suck their food from off the bottom, and do not grasp it, as do other fish, except those belonging to the sucker or carp families. The food of the sturgeon consists of shell-fish, crabs, shrimp, insects, and others, which by means of his long snout he is able to unearth.

These immense fishes are caught principally in the large pound nets, also in seines, and sometimes in gill nets set for smaller fish. In the latter, in attempting to pass they get tangled and roll themselves up so that they cannot escape, and frequently break the nets badly. They are also caught in set lines. As food, when properly prepared, they are very good, and highly prized by many. They were at one time so plentiful in the Hudson river that the flesh was familiarly known as "Albany beef," because of the resemblance of the flesh to beef, rather than fish, and by reason of their being marketed and shipped from the capital of New York State in large quantities. Great numbers of them are smoked after they have been pickeled in brine, and, prepared in this way, they are an excellent relish. The sturgeon has large quantities of eggs, and, when made into the Russian dish called "caviare," is considered a great delicacy. From the waste parts of the fish and the entrails, quite a large quantity of oil is extracted, and from their bladders isinglass is manufactured.

One of the great enemies of the sturgeon, aside from man, is the lamprey eel, which attaches itself to the body of the fish and sucks its blood. After relinquishing its hold, it leaves a raw sore, which upon healing leaves a permanent good-sized scar on the body. The fish cast their spawn principally during the month of June. We have propagated them artificially in the Hudson River, but not to the extent desired, on account of the scarcity of the fish and the consequent great difficulty in getting a pair together at the same time which were in a perfectly ripe or mature condition for casting and fertilizing the ova. As I have said above, the sturgeon yields large quantities of eggs, it not being an uncommon thing to obtain from a single specimen as high as from fifty to sixty pounds of solid eggs. The eggs are of a dark brown color, and seven of them placed side by side will measure an inch. They will hatch in from three to four days in water ranging in temperature from sixty-seven to seventy-four degrees.

The eggs when taken from the fish are very glutinous, and adhere to each other, and to everything they touch. The only way they can be kept separate is by constantly stirring them for from thirty minutes to two hours, after which the gummy substance appears to dissolve. When the young break through the shell they are very helpless little creatures. One peculiarity which was noticeable on the part of the fish in the egg was that they were able to move only the middle part of the body, while with other fish the tail is the principal part most moved. The yolk sac, which is attached to their bodies, is unusually small for young fry, and is absorbed in about six days, after which they seek their own livelihood.

There is no doubt that the sturgeon could be largely increased in the great lakes by artificial propagation, provided they were kept in pens until they were in proper condition to operate with. The great drawback to penning them in all tide waters, is that the small eels destroy the eggs, by entering the fish through the vent, and eating them.

PEAS FOR MILK.—Peas have been found an exceedingly effective food for producing milk. In the feeding test of a noted Jersey cow, in which an average of seven pounds of butter daily was given for a week, sixteen pounds of pea meal was fed per day, with sixteen pounds of oat meal, and twenty-four pounds of corn meal. Excellent pasture was also provided. This feed would supply an enormous excess of nutritive elements above those required for maintenance, giving four and a half times as much albuminoids, three times as much carbo-hydrates, and eight times as much fat as would be required for a cow in ordinary milk. No doubt, if a cow can digest sufficient food of the right kind, oil for instance, a kind of butter might be produced which would far exceed the enormous product above claimed for the Jersey cow. In such a case, a cow would act as a filter and merely separate the fats from the food, and pass it through the udder. There could be no chemical change in the albuminoids or the carbo-hydrates into fat, as is effected in the ordinary feeding of dairy cows, for the system of the cow is unable to do so much work. The effect of the pea meal in this case was probably due to its effect in enabling the cow to digest the large quantity of corn and grass, which was consumed. This effect of some food is of great importance. Pea meal seems to exert a greater effect in this direction than any other food.

A B C of Agriculture.—X.

DISPOSITION OF FARM CROPS.

Our ultimate wish in regard to farm crops is to convert them into food, raiment and money. The majority of farmer folks still live upon the products of their own farms, and it is not many years ago that flax and hemp were raised in sufficient quantity to supply the needs of the family, except for the finest of linen fabrics, and sometimes even these were no exceptions. The flax and wool-wheels were common in every household, and there were several looms in every township, as much a necessity of life as grist-mills still are in some sections. "Times change, and we change with them." We think that we get better goods that are "factory made." They look a little better, and the strong, durable home-spun is seen only as a curiosity.

We do, however, raise crops that are not for sale. They are converted into food products on the spot. They are represented by the labor of horses and oxen; they become beef and mutton, milk and wool, butter and cheese, poultry and eggs, and, not of least importance, pork, while yet the great bulk of the consumed crop is left in the form of manure, often said to be the most valuable crop the farmer makes, and one which is never to be sold.

MARKETING CROPS.

After abundant provision has been made for the needs of the farm and the live stock, the surplus is of course to be sold. Whatever a farmer has to sell, should be sold when it is in its best marketable condition, and a fair price can be obtained. A farmer should hold himself aloof from the temptation to speculate even in his own crops, until he is able and willing to lose a big margin. "Sell when a fair price is offered," should be his rule; but by correspondence and reading, he should keep himself informed of the state of the market, the supply, the demand, and demands of the foreign market. Of our wheat not one-tenth finds a foreign market. Yet that one bushel in ten sets the price for the whole, and so it is with other things. Farmers near cities and large villages will generally find it profitable to supply the home demand for the more perishable farm and garden products.

CROPS FED ON THE FARM.

Farmers, as a rule, believe in "an elastic ration," if they give the matter any thought at all. That is, they feed horses and ruminants what of grain, roots, etc., they think they can afford, or is good for the animals, and make up the rest of the feed with grass, hay, corn fodder, etc., of which the animals are allowed the measure of their own desires. This is not bad practice, especially where farmers are guided by the experience of either themselves or their neighbors, as to the proportion and quantity of feed, and it is vastly better than the haphazard way of "throwing out" fodder followed on many farms. A judicious feeder will carry a stock of animals through the winter, and save one-fourth to one-third the feed which another man would require, and yet in each case all would apparently be consumed equally clean; but the cattle which ate least, would be in better order in spring. The reason for this is found in a better adjustment of the ration, regularity in feeding and watering, warmth and cleanliness. In ten years it may make all the difference between a poor farmer and a rich one. (This is really the X Y Z of agriculture).

SCIENTIFIC RATIONS

are prescribed weights of feed of various kinds, predicated upon averages. That is, the average amount of feed that say one hundred animals of a certain average weight will require under ordinary circumstances, simply to sustain life and maintain themselves in the same condition and weight, has been accurately ascertained. Cows giving milk, require on an average a certain addition to the maintenance ration per one hundred pounds of milk. Animals giving labor a different addition, etc. Then too, meadow hay is taken at an average composition, oats the same, and so with other articles of food. The fact is, that scarcely two animals require the same ration, whether we regard the simple maintenance ration, the fattening ration, or the productive ration. Besides, the value of different samples of hay, corn-fodder, oats, etc., may vary exceedingly. Oats are especially variable in composition. Distinction is of course made between meadow hay, clover hay, millet hay, etc., but each of these varies with the time of cutting, system of harvesting, good luck in curing, etc., so that the so-called "scientific rations," although interesting to study, pleasant subjects for investigation, and really correct on an average, are impractical and fallacious, except when applied on a very large scale, as for example, in preparing to feed one hundred or two hundred beeves, or to maintain a large number of milch cows, or of store cattle, or to winter one thousand sheep. For such a purpose the scientific rations prove practical and reliable, with a suitable allowance for wastage.

TO SECURE THE GREATEST GAIN

from feed in a given time, is not always compatible with the most economical feeding, still, it often pays. An all-grass ration for milch cows, that is, lush pasturage, is unsurpassed. If we add a good feed of bran, oil-cake, corn and oat-meal, it will be relished, and an increase in the yield of both milk and butter will be noted. A small quantity of such extra food will probably pay; a large quantity, while it will still further increase the yield, will not pay. So it is in fattening animals, and it usually is demonstrated that steady, uniform gain on a moderate ration, pays much better than forced feeding, for in the latter case a greater or less portion of the feed, no matter how well adjusted to the theoretical wants of the animal, will pass undigested. The excrements of a half-starved animal, otherwise in good health, are found to be approximately exhausted of nutriment, while those of an over-fed one are still so rich in nutritious constituents, that one set of pigs have been forced to sustain themselves entirely upon the excrements of the same number of well-fed ones. Revolting as the experiment seems, it was conducted by one of the most learned agriculturists of modern times, and teaches an important truth more convincingly than a score of chemical analyses. The habit of frequent and close inspection of live stock of all kinds, will lead to the farmer's gaining ability to judge with great precision as to their condition. Bright eyes, sweet breath, a sharp appetite, a smooth coat, and an active, sprightly habit, are satisfactory indications of health. An inspection of the manure will indicate the completeness of the digestion, and the condition of the digestive apparatus. This should be done daily, and while it will not tell accurately whether or not the animal is taking all the feed it can digest, it will quickly indicate over-feeding, and a waste of feed in this way.

VALUE OF MANURE DEPENDENT UPON FEED.

Under the most favorable condition a considerable part of the feed is undigested, and is found in the manure heap. The great differences in the character of the manure of different classes of animals is obvious to all, and farmers speak of the different kinds as varying in strength (richness), according to the animals from which they come. Few ideas are more fallacious. The value (strength or richness) of manure depends upon the character of the food upon which the animal lives. The manure of pigs wintered upon hay is worth no more than that of store cattle fed in the same way. It is ordinarily richer, because the common feed of pigs is much more nutritious. It is exactly so with all other animal manures. Their value depends upon the food, and as scarcely two kinds of food are of the same digestibility, and produce manure of equal value, it becomes an important matter to study their character as affecting the value of the manure of animals fed upon them.

FORCING FLOWERS IN WATER.—There are some shrubs which perfect their flower buds to such an extent in the autumn, that in early spring they are ready to bloom, having little else to do besides opening their corollas. The little shrub, a foot or so high, known to cranberry growers as "Leatherleaf," the *Cassandra* (or *Andromeda*) *calyculata* of botanists, has its little Lily-of-the-Valley-like flowers closely placed on one side of its curved stem. This is very common in wet places in northern localities. If cut at any time during the winter, and placed in water in the house, it will soon come into full bloom, and remain a thing of beauty for several days or even weeks. The "Free-flowering Andromeda," *A. floribunda*, from the Southern mountains, is one of our most beautiful ornamental shrubs. It forms a bushy head, with fine evergreen leaves. Every branch is terminated by a large cluster of white flowers, shaped like those of the Lily of the Valley. The buds are advanced in autumn towards flowering to a remarkable degree, and if cut off and placed in water will complete their blooming in a short time. The shrub is so abundantly stocked with buds that some may be spared without injury. No doubt the popular "Golden Bell," *Forsythia*, will also bloom if placed in water, as we have had the stems do so when placed in damp earth, as sticks to support other plants.

Wheat Bran and Malt Sprouts.

Wheat bran, and the husks of grain generally, are of great value for feeding, chiefly for their nitrogenous elements and the manurial value of their mineral constituents. Of these waste products, brewers' grains, and starch or glucose meal, are worth special note because of the severe denunciations made against them by some persons. No doubt in some cases the objections have been well founded, and there has been fault on the part of dairymen, who have used them in an improper manner. These moist and highly nitrogenous substances soon ferment and putrefy, and when putrefactive decomposition begins, the odor exhaled is exceedingly strong and offensive, chiefly on account of the sulphur compounds formed. If these foods are used in this condition in a dairy, this odor would almost certainly affect the milk, and would be found concentrated in condensed milk and in butter. But if used in a fresh and sweet condition, there is no reason whatever for objection to them. It is not the use of these foods, but the abuse of them, which is objectionable. Hence no dairyman need hesitate to use any of these foods, if pains are taken to keep them sweet. They may be preserved in a silo perfectly well during the winter, and for a short time in casks or tight boxes, if well rammed down, to exclude air.

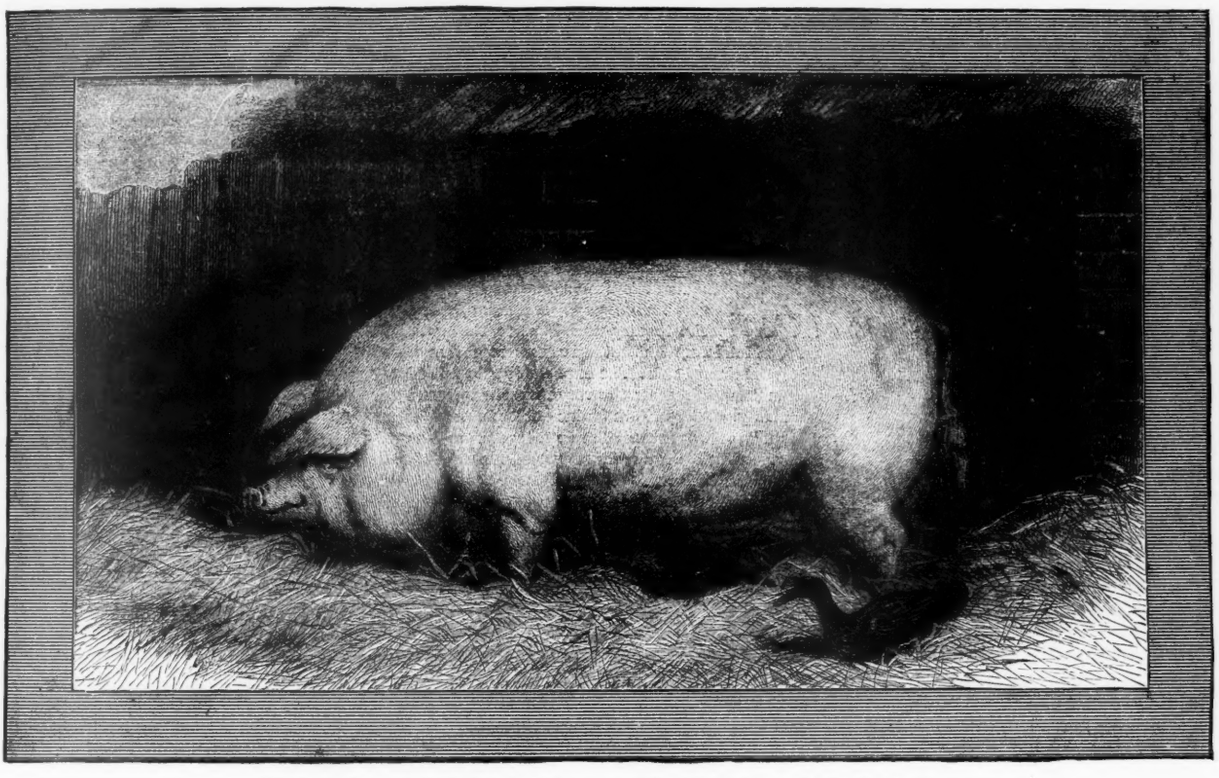
Malt sprouts are the roots and sprouts of barley germinated in the process of malting. The nitrogen is in the form of albumen and gluten, and the carbo-hydrates consist chiefly of sugar. They are seen to be exceedingly rich in albuminoids, and hence are a very valuable food for the production of milk. They are sold for much less than their food value. We have fed many tons of them to cows kept for milk alone, but do not favor them for use in a butter dairy. The milk made from them has a rich sweet taste, and the sugar in it is in excess of the average. Hence it is apt to sour quickly, unless very carefully cooled and kept. The market price of them is much less than the actual feeding value. We have bought them for eight dollars per ton, while the estimated feeding value is twenty-six dollars and sixty cents. The practice while feeding them was to steep them in water for twelve hours, and pour the thick slop thus made upon the cut hay, and then mix the ration of meal with the feed. The sweetness of the sprouts makes this feed exceedingly palatable, and cows thus fed consumed considerably more, with a corresponding yield of milk of the best quality, than with the same food without this addition. As the sprouts are light and very dry—a bushel weighing only eight pounds—and are quite sweet, and consequently are greedily eaten, they should never be fed alone and dry, as they absorb a very large quantity of water and swell proportionately; hence malt sprouts may be injurious to cows eating them in this condition.

Profitable Lambs.

In the March number of the *American Agriculturist* we invited the attention of small farmers to the production of winter lambs, so as to enable them to place early matured spring lambs on the eastern markets, at that season of the year when the highest prices could be obtained for the product. A careful survey of the trade in sheep and lambs since the first of January, 1887, bears us out as to the excellence of our advice, and there is no reason why a large increase of well-fattened spring lambs should not continue to bring in a handsome profit to the small farmers of the Eastern States; our words of counsel we give to the great flock masters of the South and Southwest, including those of Virginia. There is no doubt expressed by shippers of sheep and lambs, but that prices for the current year of 1887 have ruled, in the sheep-breeding district from whence they draw their supplies, fully one cent per pound higher than during the year 1886. The advance is due to various causes: chief among which is the increasing use of mutton, and still more of lambs. This rapidly increasing favor comes from the steady improvement in the quality of the mutton flocks. Whereas, some years ago, a sheep was bred for the fleece, and the carcass regarded as only a wool producer, now sheep offer a twofold profit—mutton and wool—with a third quantity in lard, the production of early maturing lambs. Another cause for high prices, has been the unusually severe losses by death from the severity of the winter of 1886–1887. The State of Pennsylvania suffered heavy loss in this way, so she will have to make good her loss by reserving a larger proportion than in other years has been set aside of the ewe lambs; further, a most serious loss was experienced during the broiling weather of the past summer, when to have fifty dead lambs out of a carload of two hundred and twenty-five head to two hundred and thirty-five head, was a daily occurrence. Why was this great death rate? The extreme heat was the acting cause, but the promoting cause was that of Western lambs men shipped creatures too young and too weak to resist the fatigues of long transit by rail.

The lambs offered in the eastern markets arrive first from Virginia, shortly after the flocks of Kentucky send forward their quota, then occasional drafts are received from Tennessee. One and all of these sources of supply are abundantly increased by efforts to produce excellent early lambs, but the flocks show in the east to small advantage. The lambs are leggy and coarse, invariably in mixed flocks, and worse still, of absolutely such mixed breeding as to be mongrels. What our flock masters in the South and Southwest need to do, to insure the quickest and largest profit, is to raise the standard of their flocks by using only pure-bred rams, and, further, be careful to weed out the delicate ewes. A generous diet is also essential, both for carrying and nursing ewes; and proper shelter must be provided for the early lambs, as without this, their growth will be checked, the time to market them deferred, and thus the profit lessened.

The breeds most valuable for mutton are, first, the Southdown, then the Cheviot and the Black-faced Scottish sheep. The Southdown will thrive in lower lands than either of the others, but all sheep do best on a rolling country flanked by hills. Perfect drainage and clear running water are necessary for success in sheep growing. Close herbage is most desirable, but can be dispensed with in small farming when roots and some grain form a part of the daily ration in winter, and when the summer pasture is not over luxuriant. Thick grasses are offensive to the sheep, whereas the short but sweet herbage cropped from the hillside, suffices to keep the flocks in health, and a small extra allowance puts up the flesh which brings in the extra gain. The largest number of sheep and lambs yet offered for sale this current year in one week has been 50,000 odd. Were the flocks offered as promising as they reasonably should be from the first of May to autumn, the local markets of New York would not be overstrained by the arrival of 70,000 in seven days. Sheep of good quality since the first of January last have been scarce, and invariably proved to be in steady demand, and were firm in value.



A THOROUGH-BRED IMPROVED LINCOLN.

Engraved for the American Agriculturist.

DON'T FORGET IT.—Hot-beds are usually made in February, at a time when the ground is generally frozen solid, and the needed soil for the hot-bed, or for filling the flats or boxes in which seeds are to be sown, and also boxes for the windows, will be in demand. Lay in a stock of earth for these uses now. It should be good garden soil, well mixed with decayed manure, and stored under a shed, in a cellar or other place where it can be sheltered from storms, and readily accessible. To keep the soil of cold-frames from freezing hard, fill up the frame with leaves, and place on the shutters.

The Swine of Lincolnshire.

Old Lincoln has been famous from time immemorial for its breed of pigs, and the fame which it had in the days when big, slow-feeding, heavy-headed, gaunt animals were the prevalent type, is undiminished, in the present race of the shire, the Improved Lincoln. The Lincoln of the present day is a well-formed animal of moderate size, yielding excellent pork, and fattening up to a high standard with marked and unusual ease. Its skin is fine, and covered, sparsely, with fine, slender white bristles; its ears are alert and rather erect; its body round, and straight, and well drawn out.

The Lincoln, as improved, not rarely presents itself to its fattener with a weight, at eighteen months' old, of six hundred pounds and more, while a weight of from three hundred to four hundred and seventy-five pounds, at the like age, is of common occurrence.

Probably the most choice specimens of latter-day Lincolns have been bred at Northorpe, Kirton-Lindsey, in the shire, and thence came the animal which is the subject of our illustration, and he is a splendid exponent of his blood, which flowed to him from Lincolnshire's best improved strains.

In addition to its fecundity and developing power, as considered apart from all other breeds, the Improved Lincoln takes kindly to certain crosses—in fact, to almost all—as its prepotency is a strong trait, but notably to that with the Chinese stock, whose progeny, although of less size than the Lincoln, reaches maturity more easily, and faster, upon limited rations, and, therefore, is a very economical animal for fattener and butcher.

The Growth of Wheat and its Products in the Mill.—II.

JOHN J. WILLIS, SUPERINTENDENT OF LAWES & GILBERT'S EXPERIMENTAL FARM, ROTHAMSTED, ENGLAND.

Table IV.—Showing the average number of bushels of dressed wheat grain per acre, the weight per bushel of grain, and the total produce (grain and straw) per acre of the permanently unmanured land, over four periods of ten years each, with the mean of the forty years—1844–83.

PERIODS.	*Dressed Wheat Per Acre. Bushels.*	*Weight Per Bushel. Pounds.*	*Total Produce (Grain and Straw) Per Acre. In Pounds.*
Mean of ten years 1844-53....	15¾	58.25	2711
" " " " 1854-63....	16⅜	57 57	2728
" " " " 1864-73....	12¾	58.97	1924
" " " " 1874-83....	10¼	58.25	1614
Mean of forty years 1844-83...	14	58 26	2244

The effect of season is again exemplified in the foregoing results, where a few favorable years were sufficient to make the yield of grain of the second ten years of unmanured wheat slightly higher than that of the first period; the average of the dressed grain per acre, in the first period, being fifteen and three-quarters, and in the second period sixteen and a half bushels per acre. The total produce—grain and straw—which is a still more accurate measure of the available fertility of a soil than the grain alone, is also shown to be slightly higher over the second period, with its more favorable seasons, than over the first. In the third and fourth periods, the decline is very decided. It is, however, well known to all those connected with the land in Great Britain, that the seasons have of late been most unfavorable for the growth of wheat. It is, therefore, evident that the produce of the last ten years does not correctly represent the reduction due to exhaustion of the soil itself. This, indeed, is proved by the fact that under the influence of rather better seasons, the produce of wheat of more recent years has risen to thirteen and three-fourths bushels per acre without manure, which very nearly represents the average yield of the forty years' crops.

These invaluable statistics may be briefly summarized as follows: Upon a field which has been under arable cultivation certainly for two or three centuries, and possibly for a much longer period, and which has consequently lost a considerable amount of its original fertility, we find, after the removal of forty unmanured crops, a yield which differs very little from the average of some of the great wheat growing countries of the world; the average yield of the United States, India, and China, with their virgin soils, being from twelve to thirteen bushels per acre. This may be partly due to the shorter period of growth, and to rapid maturing, or in some localities to deficiency of rains; but it is probably largely also due to want of sufficient labor to clean the land, and to consequent luxuriance of weeds. The following table shows the American yield of wheat grain as quoted by the government reports.

Table V.—Showing the average yield per acre of wheat, in bushels, in the United States. Six years—1875–1880.

LOCALITY.	1875	1876	1877	1878	1879	1880	General Average.
New England.....	16.1	13 9	16.8	15.3	15.0	13.3	15.1
Middle States.....	10.6	12.3	13.2	14.0	13.4	14.5	13.0
South Atlantic States	7.5	6 8	9.0	6.5	8.0	6.2	7.3
East Gulf States..	9.0	6.7	7.2	7.1	8.1	5 6	7.3
West Gulf States..	14.8	11.5	11.1	13.2	7.7	7.7	11.0
Tennessee and Ohio Valley	9.5	10.5	12.8	13.0	16 3	14.1	12.7
Upper Lake Region	13.7	10.2	16.1	15.2	15.8	13.5	14.1
Northwest.....	7.5	9 5	14 8	12.2	13.1	12.5	11 6
Minnesota.....	17.0	8.5	18.5	12.0	12.3	13.2	13.6
California.....	11.0	13.0	9.5	17.0	14.0	16.0	13.4
MEAN	11.7	10.3	12.9	12.6	12.4	11.7	11.9

Referring to the foregoing data, we find the general averages of the different sections of the States ranging from fifteen and one one-hundredths bushels of wheat per acre in New England to seven and three one-hundredths bushels of wheat per acre in the South Atlantic and Eastern Gulf States. Even the Northwest and Minnesota, including much prairie land, give very meager average product for such rich soil. So long as wheat is grown on such lands, under the conditions frequent, and, indeed, almost inevitable, in the case of new settlement—that is, growing it year after year with deficient cultivation, luxuriance of weeds, and the burning of the straw, only low yields per acre can be expected. The result is due to the fact that, under such conditions, soil fertility is cheap and labor dear.

Orchard Products and What Becomes of Them.

C. P. DEWEY.

"They are eaten mostly," and if the roofs of the five million or more farm houses in this country were lifted off some cold winter night, and the happy firesides disclosed, that answer to the inquiry would seem to be final. The orchard products are eaten—devoured by young and old, fed to animals, sold in the market, while uncounted millions of windfalls and worm-eaten fruit rot on the ground, and return to the land somewhat of the valuable qualities the growing crop has so eagerly taken up. By the census of 1880, the value of the orchard products of the United States was nearly $51,000,000. This includes apples, peaches, pears, etc. The special inquiry now is as to the apple crop, which is, no doubt, the largest proportion of the above-named sum. The export of apples, dried and in barrels, reaches the very respectable figure of nearly $3,000,000 in value—a boon and a "boom" of no inconsiderable account to the farmer—while canned fruits exported aggregate a value of more than $500,000. We will soon come to the figures, and show also where this fruit goes.

Many years ago, one Buchanan, a Scotchman, came to this country, and a few years later, with characteristic national foresight, devised the plan of sending American apples to Europe. In 1845 he dispatched five barrels from Boston to Glasgow. The venture paid, and he repeated it, until he had an established trade. The steamships then were half the capacity of those in our day, and took twice as many days to make the passage. The apple export began from Boston; now the export is mainly from Boston and New York, the two cities doing five-sixths of all this business.

In the export of dried apples, Baltimore is far ahead of Boston, while New York, as is natural, leads the record, and almost monopolizes the business. The dimensions of this export trade in apples are, in these days, imposing and grand; and Glasgow has yielded to Liverpool as the port of entry abroad. The five barrels of 1845 have grown to more than seven hundred thousand in 1885–6, and Canada has entered the field as a competitor. The receipt of apples at Liverpool for a few years are given.

	UNITED STATES.	CANADA.	TOTAL.
1876–7	248,942	29,598	278,540
1880–1	699,102	161,333	860,435
1885–6	489,770	108,114	597,884
For ten years,	2,757,457	721,813	3,479,270

This is a part only of the exportation. The totals for the United States alone, for the last two fiscal years, are as follows:

	APPLES, BARRELS.	VALUE.
1884–5	668,867	$1,572,126
1885–6	744,539	1,810,606
	DRIED APPLES, POUNDS.	VALUE.
1884–5	18,416,573	$1,062,859
1885–6	10,473,183	548,434

The value of the canned fruits exported in the first named years was $473,944—in the second $580-422. Now where did this fruit go? To what eager appetites in other climes did our farmers minister? Of the apples exported in the two years 1,286,568 barrels were landed in England. The Dominion of Canada took 32,000; Germany, 18,000; British possessions in Australasia, 22,901; Cuba, 10,000; Hawaiian Islands, 4,500; Mexico, 6,700. They went to every part of the known world. Out of seventy-four foreign countries to which the United States exported directly in 1886, fifty-nine partook of our American fruit. The canned fruit went to sixty-two countries; the dried apples to thirty-two. This is a wide and generous distribution, and may easily be made wider and larger. The market for American dried apples in the two years named was in Germany, 11,000,000 pounds; Belgium and France, 2,500,000 each; Netherlands, 8,500,000; Australasia, 1,500,000. The value of the canned fruit exported in the two years was a little more than $1,000,000. Of this Great Britain and Canada took more than half; China had $16,500 worth; Australasia, $214,582; Colombia, $19,869, and the Hawaiian Islands, $56,508. The total value of the exportation of the orchard product for each of the two last years is about $3,000,000, or one seventeenth of the value of the full crop. The cereal harvest of the United States is valued at from two to three thousand million dollars. The total value of the export of breadstuffs and cereals for the last fiscal year was $125,846,558, a sum which bears about the same proportion to the total value of the cereals, that the fruit export does to the total value of the fruit crop. The importance of the fruit harvest and fruit culture is at once enhanced by this consideration.

Bird Helpers.

Mrs. Mary Treat, the well-known entomologist, writes us prefatory to her new enlarged volume on Injurious Insects of the Farm and Garden:

I wish to add my testimony in a few words, by way of preface, in favor of the various birds that visit our gardens and orchards, in the capacity of helpers, as they feed upon some of the most noxious insects which we have to contend with.

First and foremost among these helpers is the purple martin. It is the general impression that this bird takes insects only on the wing, but it does more than this. I saw numbers of them this past summer taking the rose-bugs from the grapevines. They swooped down and picked them off without alighting. They circled around in companies, back again to the same vine, each one snatching off a bug as it passed. And not only the rose-bug falls a victim to its appetite, but it even stoops to take the Colorado potato-beetle. This has been seen by others in our town, as well as by myself. Put up boxes for the martins, and see that the English sparrow does not get possession.

The oriole is another great helper. It knows how to pull the bag-worm from its case, and does it systematically and rapidly. The tent-caterpillar and fall web-worm it also has a liking for: it ruthlessly tears the tents and webs to pieces and destroys untold numbers. Allow no gunner to shoot one of these beautiful, gaily dressed birds on your premises—not even if the lady of his choice is pining for a skeleton to perch on her hat.

For several years past the leaves of our elm trees have been ruined by the elm-beetle. Last year I noticed the cedar bird devouring the beetles and larvæ. This year our elms are comparatively free from the pests. The leaves are scarcely injured at all, and the cedar birds are obliged to look close to find a beetle. They hunt over the trees in small flocks. They also destroy many other injurious creatures. This bird likes cherries. Raise enough for them as well as for yourselves, and they will pay you back with interest.

The catbird and red-eyed vireo both eat the unsavory pear-slug. But it is not necessary to mention the good services rendered by our more common birds, such as the robin, brown thrush, catbird, bluebird, and wren, as all observing horticulturists are aware of the good they do. Our winter birds are also doing good work. The seed-eating ones pick up great quantities of the seeds of noxious weeds, while our woodpeckers, jays, and chickadees are constantly on the lookout for hibernating insects. Spare and encourage the birds, both winter and summer, about your home grounds and fields.

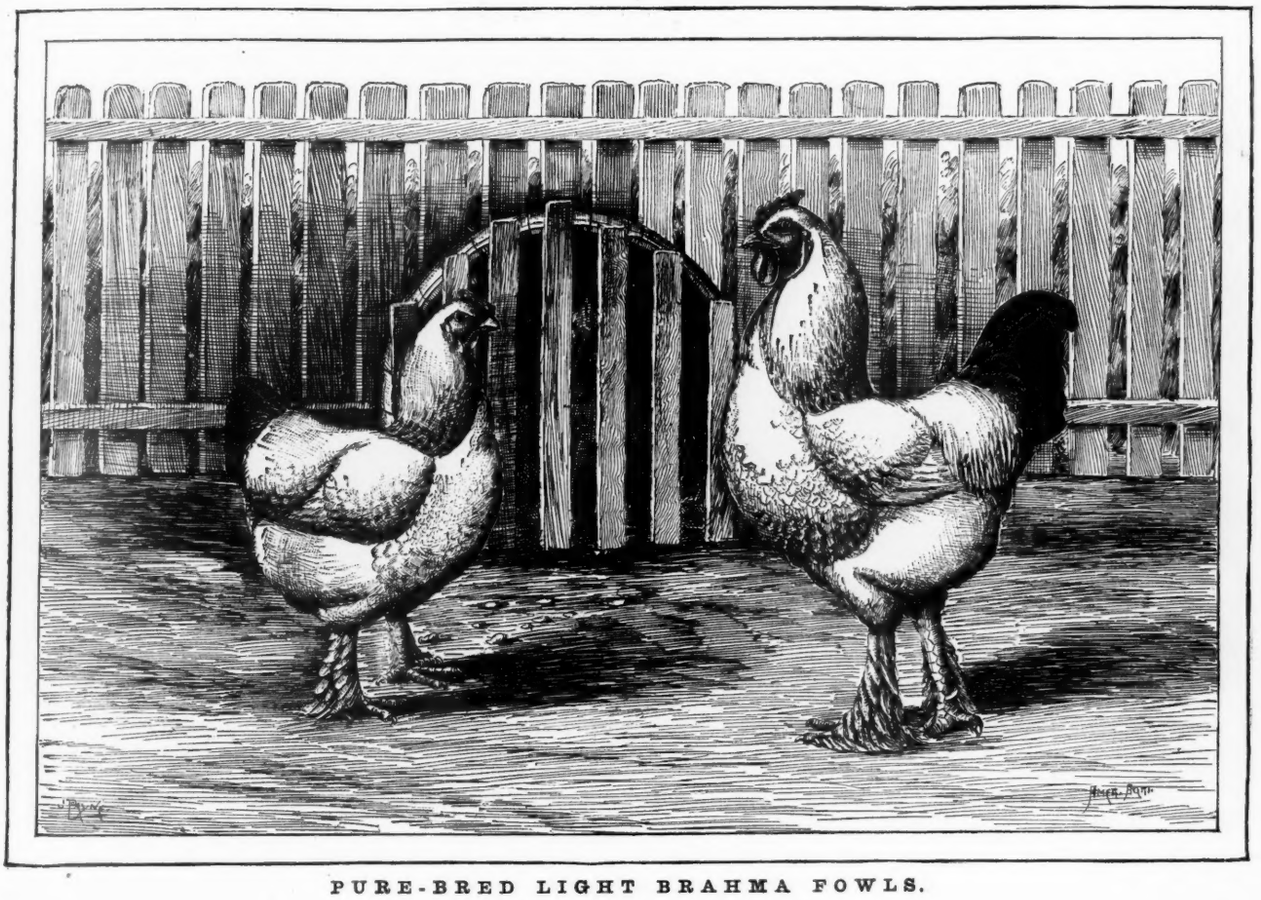
Brahma Fowls.

It is a great gift to be able to recognize true worth at sight—"to know a good thing when you see it," as they say, and these Brahma fowls are a remarkable illustration of this truism.

In the year 1846, a Hartford man, a Mr. Chamberlain, saw, on the docks in New York, on board of an East Indiaman just in from a long voyage, and in possession of a sailor, some fowls. They were clearly of the Asiatic family, but different from the Shanghaes, Chittagongs, and Cochin Chinas, with which he was familiar. So he bought them, and took them home. His business, however, interfered with his bringing them before the public, so he parted with them to Mr. Virgil Cornish, then of Hartford, subsequently of New Britain, who propagated them successfully until he had a fine stock. They were not brought out until 1852 at a great poultry show in Boston, where they received the name *Brahma Pootra*, because they had come from a port near the mouth of a river of that name. They were highly appreciated at once, on account of their great beauty, fine form, and large size. They helped greatly to boom the so-called "hen fever," which had been prevalent, and was beginning to flag. One of their distinguishing peculiarities is the triple comb—a central comb rather low set, and a small comb on each side of it, and becoming one with it above the base. Somewhat similar combs had been noticed occasionally in other breeds of Asiatic fowls, and the Malays had a clumsy, irregular triple comb, which had been called a "pea comb," for what reason it is rather hard to tell. The Brahmas all possess the comb described in a small and beautiful form, almost without exception, and this is called a pea comb from its triple form. They exhibited from the very first that peculiar thorough-bred look which marks thoroughly well bred, pure blooded animals of all kinds. They proved hardy, excellent winter layers, very domestic, of the largest size, of quick growth, and a proud carriage; and, while good foragers, easily coralled by a four-foot fence. These same characteristics have been maintained during forty years of careful breeding; while the beautiful points of the breed have been perfected. The pure white plumage of the body, the dark pencilled hackle, with the irridescent black tail feathers, and abundantly feathered legs and feet.

The Brahma Pootras were taken to England, and there the fanciers, instead of discarding the dark colored birds as the Americans had done, bred light ones, following our standard, and bred the darker ones also by themselves, selecting the darkest ones for breeders, and so formed that beautiful and useful breed, the Dark Brahmas. The English of course at once and subsequently searched well throughout the region whence these fowls came for others with which to renew the blood; but they have never been found. What a fortunate thing it was that Mr. Chamberlain knew a good thing when he saw it. For all we can see, if he had not recognized merit in them at first sight, and had passed them by, these two superb breeds of fowls would have been lost to the world, or we would be still waiting for some traveller to discover the original strain away back from the sea, in the mountains of Central Asia or elsewhere.

The two breeds are now raised wherever pure-bred poultry are to be found, and are known as Light Brahmas (of which we give an engraving) and Dark Brahmas. Crossed with the English and continental breeds, they add to their size and early maturity as broilers or roasting fowls, make splendid capons, and are on the whole as useful and important a breed as we have.



PURE-BRED LIGHT BRAHMA FOWLS.

Drawn and Engraved for the American Agriculturist.

Prolonging the Tomato Season.—There are usually a few frosty nights this month, and no more until some time next month. Tomatoes, if protected from the first frosts, will continue to ripen up. Covering some of the best plants with newspapers or other materials, will protect them.

The Poultry Yard in Autumn.

A. E. COMPTON.

Mistake is made sometimes by poultry fanciers, and those in the business as well, in placing too many eggs under a hen for her brooding. No larger number than nine can be set with perfect safety, in the autumn; and, therefore, if it be desirable to bring out many chickens, the art of managing two or more sitting hens at once should be acquired. In such case the fancier or breeder can put two broods together, and, being careful about the night shelter, there need be no difficulty in accommodating so many broods as shall number twenty to fifty chickens to the attention of a single hen, particularly if the weather of the season be reasonably mild and settled.

Late chicks should be cared for by their mother until a few weeks old, when they can be placed together in a well-sized box, the open sides of which are covered by coarse wire netting. The floor of the box should be well-covered with fresh soil, and have a simply-made brooder at one end, for the little things to run under at night. Give the box a place in the kitchen, for the chicks can't get under your feet, nor can rats or cats disturb them; set box and contents out in the sun when it shines warmly; change soil frequently, feed and watch brood carefully. In this way it will be not difficult to raise all successfully.

Do not keep too many old hens. Select reliable sitters and mothers, as many as are needed for that purpose. Dispose of the rest, and keep early hatched spring pullets to lay in fall and winter.

Sunflower seed are the best of feed to stimulate egg production in autumn and winter. Being rich in oil, they take the place of meat to a great extent. But they must not be used too freely.

For keeping brooding hens cleanly, invest in a good bunch of tobacco leaves; put a few leaves under the sitting hens, and scatter them around the fowl house; tie some bunches on the sides also, and there will be no trouble from vermin.

Greenhouses for Profit and Pleasure.

PETER HENDERSON.

DETACHED GREENHOUSES, MODES OF HEATING, ETC.

Where more extended glass structures are desired they must, of course, be detached from the dwelling or other buildings, and if shelter *without shade* can be had from hills, woods or buildings from the north or northwest, so much the better. When greenhouses, graperies, rose houses or other greenhouse structures are wanted for forcing flowers or fruits in the winter months, they should always be built after what are called "three-quarter spans," that is having nearly two-thirds of the roof long on one side, and the other one-third on the other. The long or two-third side in all cases as near as possible to slope directly south, the object being to obtain during the dull days of winter as much sunlight as possible, and for that same reason the woodwork of the frame should be as light as possible, and the glass should be of the largest size that can be economically used. The average size now in use for this purpose is twelve by twenty inches, put in the twelve inch way. The brand of glass most used is what is known as second quality double thick French. It is of the utmost importance that the glass is clear and without flaws, otherwise the flaws will concentrate the sun's rays, forming lenses, and burn the foliage. When greenhouse structures are not wanted specially for winter flowers or fruit, they may be formed of equal spans. In this case the ends should face north and south, so that the distribution of light may be equal on each side, the east side in the morning and the west in the afternoon.

All the walling from the surface of the ground to the glass of a greenhouse, had better be made of wood, unless the walls are made very thick when built of brick or stone; the continued warfare in winter between a zero temperature outside, and sixty to seventy degrees inside, will in a few years destroy brick or stone walls. When the walls are formed of wood, the best way is to place locust posts at distances of four feet apart, and nail to these a sheathing of boards; against the boards tack asphaltum or tarred paper, and directly against that place the weather-boarding. This forms a wall which, if kept painted, will last for fifty years, is equally warm as a twelve-inch brick wall, and costs less than half. A common error is to board on each side of the post and fill in with sawdust or shavings, this should never be done, as this fillling soon decays, besides forming a resort for mice and other vermin. We have had just such a structure in use for the past fifteen years as a cold grapery, that is, having no heating apparatus, the forwarding being done only by the action of the sun on the glass, and it has proved a cheap and satisfactory luxury. A conservatory or grapery of this style costs from 50 to 60 cents per square foot, without heating apparatus. Heated by hot water, it would cost $1.00 to $1.25 per square foot. If heated by a horizontal flue the cost will be only about 75 cents per square foot.

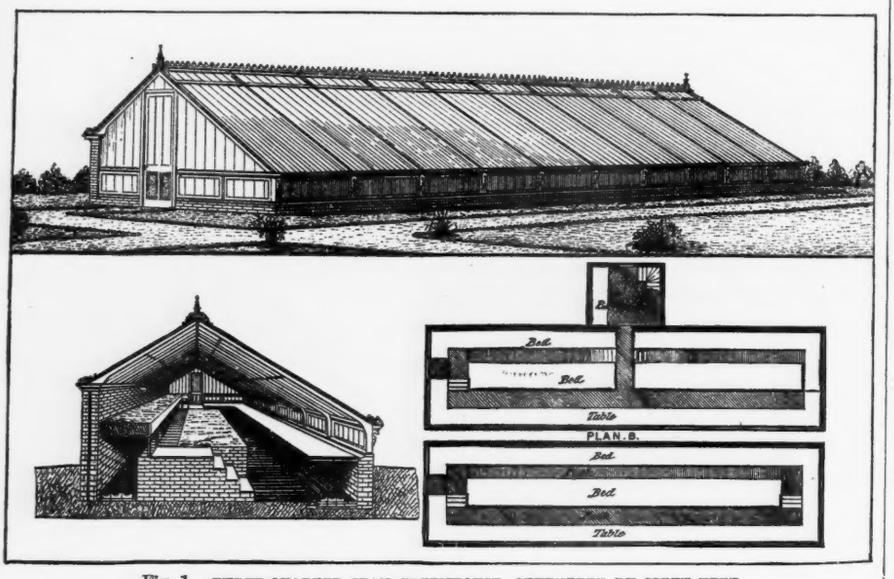


Fig. 1.—THREE-QUARTER SPAN GREENHOUSE, SEVENTEEN BY SIXTY FEET.

GLASS AND GLAZING.

For winter forcing of either fruits or flowers, the glass should be not less than 10 by 12 in size, and laid in the 12 way, and if 12 by 20 all the better. Even with the greatest care, some flaws will usually remain in the glass, and more or less burn the leaves after the sun becomes strong, to counteract which a slight shading had better be used on the glass from April to September. We use naptha, with just enough white lead mixed in it to give it the appearance of thin milk. This we put on with a syringe, which sufficiently covers up all flaws in the glass to prevent burning, and at the same time tends to cool the house from the violence of the sun's rays. This is by far the cheapest and best shading we have ever used. It can be gradated to any degree of thickness, and costs only about 25 cents per 1,000 square feet of glass, for material and labor.

In glazing, the method now almost universally adopted is to bed the glass in putty, and tack it on top with glazier's points, using no putty on the top. The glazier's points are triangular, one corner of which is turned down, so that when it is driven in, it fits the lower edge of each pane and prevents it from slipping down. A great mistake is often made in giving the glass too much lap; it should only be given just enough to cover the edge of the pane (from one-eighth to one-fourth of an inch). If given too much, the water gets in, and when it freezes it cracks the glass.

All who have had experience with greenhouses know that no matter how well the glazing has been done by embedding the glass in putty, that the water gets in at the crevices, rotting the putty and consequently loosening the glass. A simple plan to obviate this (which has recently been introduced), is to pour along the junction of the bar with the glass a thin line of white lead in oil from the slender spout of a machine oil can, over which is shaken dry sand, this at once hardens and makes a cement which effectually checks all leakage. This carefully done will make such a tight job that no repairs will be necessary for many years.

The accompanying engravings represent a few styles of greenhouse structures of fine finish, designed by Messrs. Lord & Burnham, horticultural architects. It is all important that the hights, angles, etc., are kept as near to the plans given as possible, as each plan we believe to be as near correct as it well can be to give the best results in culture. A scale can easily be adapted from any of the measurements given.

Figure 1 represents a three-quarter span greenhouse 17 by 60, ridge 8 feet, heated by six runs of four inch pipes for hot water. It is the most useful style of all greenhouse structures, and is used for the model rose house, but can be adapted to the growing of all kinds of flowering plants for winter blooming, or for forcing strawberries, cucumbers, and other fruits or vegetables. The estimated cost of such a structure (if the frame and walls are made of wood, and as a general thing we advise them made of wood) would be from $1.25 to $1.50 per foot covered by the house, that is, a house 17 by 60 at $1.25 would cost $1275, for the whole structure complete, including the heating by steam or hot water, ventilating apparatus, etc.; of course in proportion to the extent of the buildings the cost would be greatly lessened. The engraving shows the walls to be formed of brick, but this is not only more costly but in our experience is not so good as wood.

Fig. 2 represents a greenhouse 20 by 60, ridge 11 feet, full span, the ground plan shows it to be divided in the center by a glass partition, so that thus divided, if required, it can be used for greenhouse and hothouse plants by simply adding two additional pipes to the section used for the hothouse, or one section may be used as a rose house, and the other for greenhouse plants. The cost of this structure would be about $1.50 per foot, or $1800 for a house 20 by 60 complete in every particular.

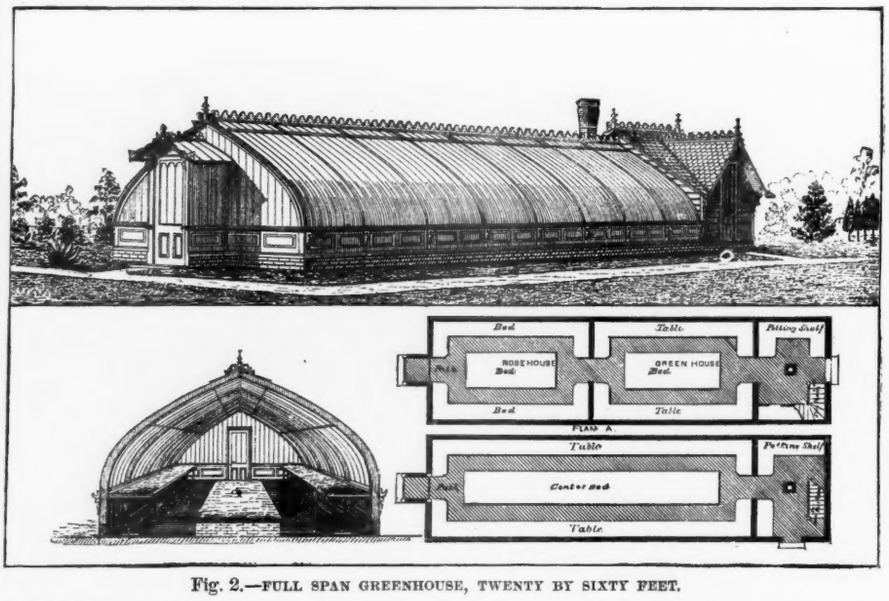


Fig. 2.—FULL SPAN GREENHOUSE, TWENTY BY SIXTY FEET.

Fig. 3 represents a curvilinear three-quarter span house, 18 by 60, with 12 feet ridge, which can be used either as greenhouse, rose house, or grapery. The cost, if built of wood (as advised in the house 17 by 60, fig. 1), would be about $1.50 per foot, or $1620.

Fig. 4 represents the perspective view of the interior of a cold grapery we built some years ago for our own use. The dimensions are fifty by twenty-five feet. It is finished in very good style, and cost but little more than $1,000 without artificial heat. If furnished with hot-water pipes, as shown in the engraving, it would cost about $500 in addition. The building was begun by setting locust posts four feet apart; on these was framed the sill, on the front of which were placed upright sashes two

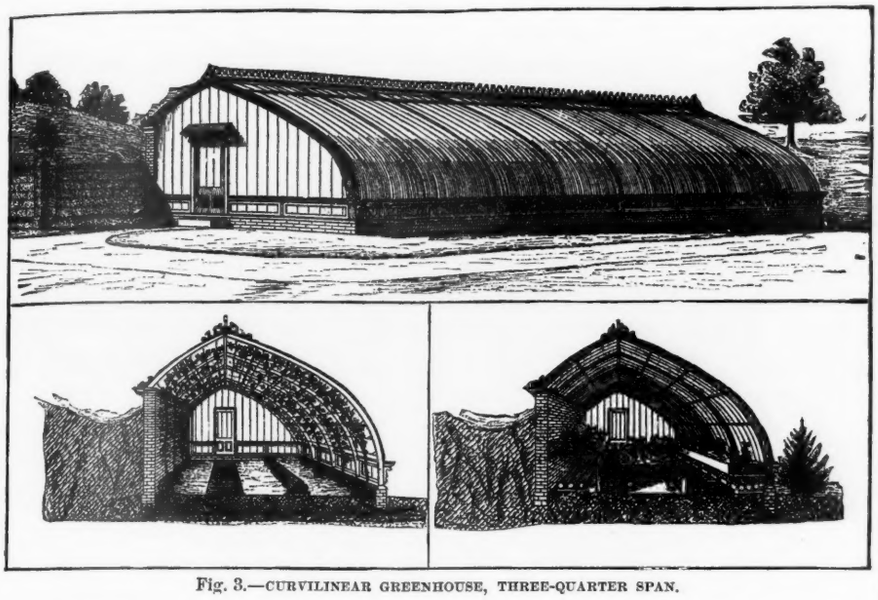


Fig. 3.—CURVILINEAR GREENHOUSE, THREE-QUARTER SPAN.

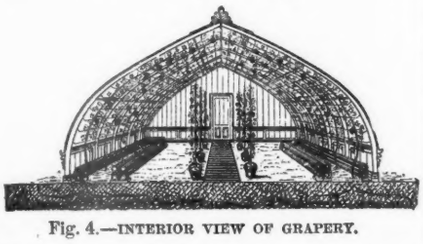


Fig. 4.—INTERIOR VIEW OF GRAPERY.

and a half feet in hight, and on them the gutters. From the gutters were sprung the bars, ten inches apart each way, running on the east side clear to the ridge pole; on the west framed to within two feet of it, so as to give room for lifting sashes. These were two feet wide and six long. To these sashes, eight in number, were attached the ventilating apparatus, which by turning a crank opens these sashes from one to twenty-four inches, as desired. The front sashes may be made so that every alternate one can open outward.

Figure 5, center 50 by 50, each wing 25 by 45, shows a beautiful and one of the most useful glass structures. The center is to be used for a conservatory or show house, where ornamental foliage or flowering plants may be placed, the wings to be used for grapery, greenhouse, or rose house, as desired. Such a building as shown in the engraving would cost with iron frame and brick foundations, with all heating and ventilating apparatus complete, about $2.50 per foot, or $11,875, if of the above dimensions. This is the favorite style of greenhouse structures in the vicinity of New York, varied somewhat in size or architectural details according to the taste of the owner.

PHYLLOXERA LAWS IN EUROPE.—It is right that European countries, in which grape growing is one of the most important industries, should take all proper measures to prevent that scourge, the Phylloxera, from entering its territory. Where, as in some cases, this protection against phylloxera involves the exclusion of all living plants, it shows a panicy feeling among the law makers, rather than a desire to protect the vineyardists. In view of the prevalence of phylloxera in Italy, the Bureau of Customs of France have issued a "decree," in which is prohibited the importation from any Italian province, of plants, flowers, cut and in pots, of fruits, of vegetables, and in general, of all the products of horticulture and of market gardens of Italy. The Minister of Agriculture is charged with carrying this decree into effect. This was signed July 16th by President Grévy. If this is enforced to the letter, the traveller from Italy on entering France, must throw away his buttonhole bouquet, before crossing the border.

The Modern Peach Basket.

J. ALEXANDER FULTON, DELAWARE.

The stave basket now supersedes all others in general use. It has these qualities to recommend it. It is light, reasonably strong, and cheap. Baskets of this kind are made in large quantities at almost every large shipping point in the Peninsula, and cost from five to six dollars per hundred. They give better satisfaction than any other yet produced, and, for general shipment, these are preferred to all others, and indeed to all other kinds of packages. For a long time there has been a general and strong desire to obtain a still cheaper basket that might be sold or given with the fruit; but so far none costing less than five cents, and yet sufficiently strong to carry safely, has been produced, and it is doubtful whether such an one can be. The stave basket at five cents, and holding five-eighths of a bushel, is not very expensive. A rival has, however, very recently appeared, in the shape of a paper basket of the same size, and a shade cheaper. It was exhibited at a peach-growers' meeting, held at Dover, in June, 1887, but the growers seemed doubtful of its sufficiency. The doubts expressed were these: That the ventilation was not sufficient; that it was not strong enough; and that the juice of soft peaches would draw taste or color from the material. These were, of course, only doubts, but they were strong enough to prevent its sale in any considerable quantities, especially as the reduction in price was not sufficiently tempting to take the risk. And up to this time we may say that the stave basket has no superior, and scarcely a rival.

Whatever package may be adopted, they should be procured in good time, as it often happens that just in the hight of the season, when most wanted, they are most difficult to obtain. The quantity a planter may need will depend not only upon the size of his crop, but also upon two or three collateral circumstances. If the baskets are to be returned, as heretofore, he will need one basket for every three of fruit; but if he sells his baskets with his fruit, he will, of course, need as many baskets as he has baskets of fruit to put in them. Planters used to insist upon the return of "empties," as they were called, but that is not nearly so much the case now, and the present tendency is decidedly to let the basket go with the fruit. The basket question has given more annoyance, and caused more irritation than, perhaps, any one thing connected with the marketing of peaches. Shippers insisted upon their return. Commission men engaged to do so, and required a deposit from every retail dealer equivalent to the price of the baskets, in order to insure their return. This deposit was sometimes greater than the value of the baskets, and if it never came back, the purchaser suffered loss. Then, again, the baskets were a source of annoyance to the draymen, whose business it was to hunt them up and deliver them to the proper parties. The railroad men gave themselves very little trouble to deliver at the proper points, and sometimes the baskets belonging to one station were left at another; and, even if they did reach the proper station, those of different shippers would be so mixed up that it was very troublesome to separate them so that each could have his own. The whole system of return of baskets involves so many petty annoyances and losses, that the more intelligent and progressive planters now favor the sale of the basket with the fruit. In this way they get rid of all these drawbacks and causes of irritation, which have been such a worry for a score of years. And on the score of mere profit and loss, they have come to the conclusion that it pays to sell the basket with the fruit. In the first place the basket is inexpensive, and it is contended that more sales are made and at better prices when the baskets have not to be returned. Many people would rather pay five, even ten, cents a basket more without any obligation to return. They regard it both as an annoyance and imposition. Besides, in the opinion of many, fruit sells better in a fresh, neat basket than in a faded old one. In these views the growers are confirmed by the universal voice of the commission men, some of whom do not hesitate to say that fruit sold in new baskets and with them, will bring more than two fold the price of the baskets, if the latter have to be returned. Such being the reasons urged, and the tendency of public opinion among growers, it is not likely that many baskets will be returned hereafter to the growers.

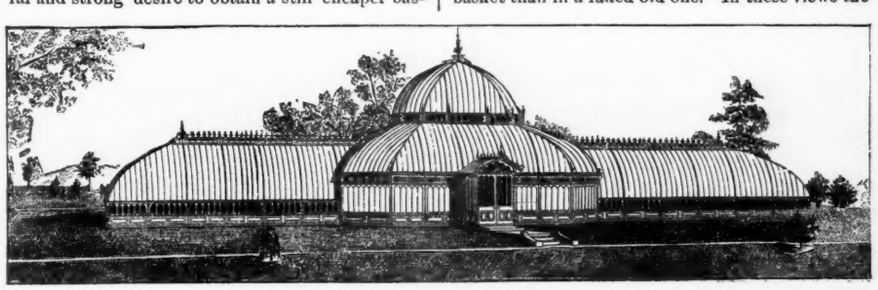


Fig. 5.—CONSERVATORY WITH WINGS ATTACHED.

Two Promising Native Cherries.

PROF. CHARLES E. BESSEY, NEB.

Any wild fruit which has anything of promise in it should be carefully examined, for American horticulture is not yet by any means overloaded with good fruits. It is the duty of horticulturists to continue to search for fruits which may, by cultivation and amelioration, be made fit for the orchard or garden.

THE SAND CHERRY (*Prunus pumila*), as it grows upon the sandy soil of certain tracts in northern and northwestern Nebraska, has much which promises well for the future. It is a very small shrub, often no more than eight or ten inches in hight, with slender, trailing stems, which creep over the soil and strike root here and there. The plants grow in clusters, forming low thickets, which at a short distance resemble low masses of wild rose bushes. Although so small, the plants are remarkably healthy, and have an air of sturdy vigor which tells at once that they are at home upon the sandy soil. The leaves are from an inch to an inch and a half long, and are wedge-shaped below and rather bluntly pointed above. Towards the apex the sides are serrated, but otherwise they are entire. The small white flowers are borne on short flower-stalks (pedicels), which are grouped in little clusters (umbels), just as in the common cherry and the plum, only here there are but few flowers, often but three or two. Occasionally there is only one flower in a place. In July the cherries ripen. They are much like an ordinary garden cherry in size, color and shape. An examination of a great number enables me to say that the average size is fully half an inch in diameter, with many specimens reaching fully three-quarters of an inch. In color they are of a deep black-red, and when fully ripe the black is so intense as to entirely obliterate the red. They vary in shape from almost perfectly spherical, to a heart-shape on the one hand, and to oblate on the other. The flesh is darkish colored, and has an agreeable taste, although there is in it a little of astringency. The little bushes bear profusely, and in places where they are abundant the people gather them for use in the kitchen. Jellies and jams are made from them, and I can testify to the delicious taste of the latter. Under cultivation I have great hope that the little astringency now present may be made to disappear, and at the same time the size of the cherry materially increased.

THE ROCKY MOUNTAIN BLACK CHERRY (*Prunus demissa*) is a shrub from three to eight or more feet in hight. It resembles the wild black cherry of the East (*Prunus serotina*) in many respects, notably in the thick leaves, and the large black edible cherries. The leaves are, however, much broader than those of the Eastern tree, and the serrations are somewhat sharper. There is, moreover, as a usual thing, somewhat of downiness on the under surface of the leaves. The cherries are borne in long clusters (racemes), as in the Eastern species. They are a little larger, often reaching three-eighths of an inch in diameter. In shape they are mostly oblate, with the base (stem end) quite depressed, and the apex rounded; occasionally, however, they are somewhat ovate in form. When ripe they are black, and have a most agreeable taste, which is destitute of the bitterness so often noticed in the Eastern species. Now and then one finds a shrub on which the cherries remind one of the choke cherries of the East (*Prunus Virginiana*), but as a rule there is an entire absence of that "puckeriness" so characteristic of the choke cherry.

These black cherries are very prolific, and in every thicket of the shrubs, quantities of the cherries are found. I gathered and ate them freely on my recent botanizing trip in northern and northwestern Nebraska, and in the Black Hills of Dakota, where they occur in abundance. The inhabitants of those regions gather them for use in various ways. At one place where I stopped for dinner, I found that the people were in the habit of making pies of these cherries. That the latter are not only palatable, but even most excellent, I can testify to from personal experience. I should like to see this shrub have the advantages of good culture, and the care of intelligent horticulturists. I believe it would respond to such treatment, and that from it we might obtain another valuable fruit for general cultivation in parts of the West.

For and Against Shoeing Horses.

The inquiry of one of our subscribers from Westchester County, N. Y., in our August number as to the advantages of not shoeing horses, has elicited several replies, of which we give the following:

Mr. Geo. Copeland writes us from Jefferson County, Wis.: In response to the suggestion that your readers write from their experience as to the use of barefooted horses, let me say that I have a pair of young horses which I raised myself, and which I, having read the arguments in favor of bare feet, intended should go without shoeing; but I found when I came to work them that it would not do. Long before they had done severe or constant labor on the road, they became tender and sore, and it became necessary as well as merciful to shoe them. Our roads are not very hard, being country roads where gravel is not plenty. The horses are perfectly sound and their feet good; but experience teaches me that they must be protected. In winter, when they are not constantly used, they go without shoes, and I have no doubt that it is better for them to go so; but if I were obliged to use them every day, even in winter, I should have them shod; for there are days when the roads are in such condition that it would not be safe, neither could they draw a load without them. Perhaps I had better stop here, for the teaching of experience is the only teaching that has any value. Too much that is written for the farmers too plainly comes from theory and not from experience, and for that reason is utterly worthless, or worse. But I will just add that my theory is that some horses, under certain conditions, can go without shoes, and that when they can do so it is better that they should. But that no horse under all conditions can go without them.

Mr. S. H. Cook, Ashtabula Co., O., writes us: I have been for about twenty years a subscriber to your valuable paper, and was interested in a recent article of inquiry and remarks on the subject of horseshoeing. My farm team is never shod. One horse is eight the other nine years old. The oldest I have owned from a colt. It never had a shoe on. The other I bought at four years old, and it had been shod a year. I removed the shoes when the frost came out of the ground in the spring, and it has never had a shoe on since. I keep the hoofs well trimmed with a mallet and strong two-inch framing chisel, by commencing at the heel, setting the chisel perpendicular, and with the mallet I drive the chisel down onto the clean plank floor, then with a knife I trim the edge of the hoof and the frog, leaving the edge of the hoof true and smooth but thick, which prevents breaking or splitting.

Our winters in Northern Ohio are long and cold, snows deep, the mercury drops from twenty to thirty degrees below zero, and there is much freezing and thawing. Yet my team suffers no inconvenience by not being shod, summer or winter, with the exception of an occasional day when a thaw has suddenly "taken cold," and left glaring ice spots. The horses will draw a load of hay or grain to the barn floor, on the hard frozen road, in the fields or woods, on the ice, better than any team can, unless just freshly and sharply shod. They will pull a load on the icy road where a team could not stand which had been shod a few days. I had supposed that the most severe test would be on the "hubs" in spring and fall, when a sudden freeze closed up the mud, but I have had them on the road often at such times, and they never flinched a step. Our roads are clay, very smooth in summer, few hills, and no stones in the road bed. It might be, and without doubt would be, worse on stony roads.

My experience and observation satisfy me that no farm team in a country like this needs shoes, even though they are much on the road. They are better without than with them, if properly cared for when colts and never shod. More farm horses are ruined by bad shoeing than for want of shoes. Many horse-shoers either through ignorance or want of care soon ruin a horse's feet. A badly-shaped shoe, a hoof improperly trimmed, the red hot shoe from the forge is applied, and the hoof burned until it is called a fit, then comes the nailing in a hurried bungling manner, many of the nails piercing the quick until blood flows—result, lame horse. Is it a wonder?

But the smith is not all to blame. It is more often the farmer, who, as a rule, when a horse is once shod, allows the shoe to stay as long as it will. Often I have seen horses with shoes almost overgrown by the hoof, and what was once the heel of the shoe about in the middle of the foot. A man that is so stingy of his time or money as to permit this state of things does not deserve a horse, and if he permits it through carelessness, he is equally guilty.

My advice is, don't shoe your horses. Keep the colt's feet properly trimmed while growing, as you would shape a fruit or ornamental tree, and when he is old enough to work he will be able to do without shoes, unless it be for some special purpose. Try it, farmers, and then you will know.

Mr. J. M. Frey writes us from Fayette Co., Iowa: In the August number of the *American Agriculturist*, I noticed an article on the advantages and disadvantages of shoeing horses. According to my experience it is an unnatural proceeding to shoe a horse. If one examines the hoof of a colt that has never been shod, it will be found that there is a sharp edge on the under side. The object of this is that the animal may go on smooth roads. If the horse is never shod, this protection remains as long as the animal lives, but in shoeing it has to be cut off, and it will never grow as perfect again as it was naturally. I have two horses, respectively eleven and twelve years old, which have never had a shoe on their hoofs, and they travel on smooth roads as safely as when they were colts, and their hoofs have no blemish. On the other hand I know horses which are constantly shod, and cut and calk themselves so much that they have to be in the stable the greater part of winter. Unshod horses can do all the necessary farm work in summer and winter; and then the saving in blacksmith bills is not an inconsiderable item.

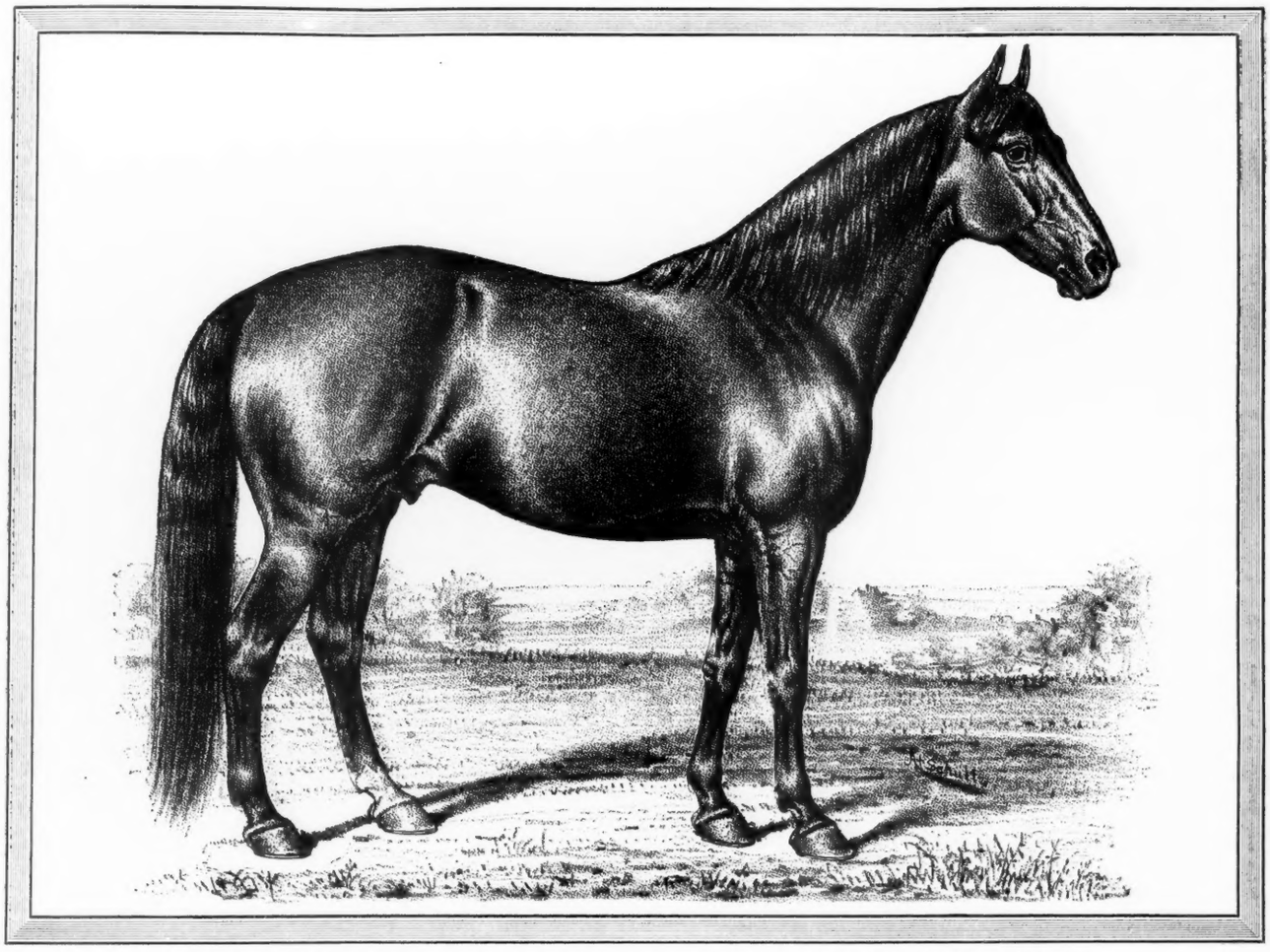
Improving Seed Wheat.

A prominent seed firm in England is reported to be making "important experiments" in crossing varieties of wheat. This is done with a view to obtain kinds which shall be better suited to the particular conditions of soil and climate of various sections of England, than any varieties now grown. The most experienced wheat growers of this country have long been convinced that our varieties are better than our culture, and that our farmers need better preparation of the soil rather than new varieties of wheat. Every farmer can greatly improve the variety he is growing, by giving proper attention to his seed. Let him devote a patch or a part of a field to raising seed. This should have special fertilizing, and the seed should be in rows far enough apart to allow of cultivating between them. Thin the plants in the rows so as to give each one abundant room, and pull out all inferior and badly developed plants. Before harvesting go through and remove all that have short and poor ears. Thrash this wheat by itself, and in winnowing take pains to blow the light grains away from the heavier ones. By following this course for several years, allowing each plant to do its part, great improvement will result, and a valuable strain, if not variety, will be established.

HARVESTING SWEET POTATOES.—Dig sweet potatoes on a warm day, as soon as some of the leaves are blackened by frost, being very careful not to cut or bruise them. Expose to the sun for a day, and pack in barrels as carefully as if they were eggs, and store in a warm, even temperature.

The American Trotting Horse.

Fashion has brought about many changes in horse breeding among American farmers, and no race has set the new style more forcibly or to larger purpose than the American trotting horse. The American trotter is a horse capable of every service; there is, in almost literal truth, no limit to the speed in which he can trot one mile, and his capacity of endurance, whereof such contests are most exacting proof, is accepted as a fact in the minds of all observant men, while his patient temper, and good size, combined with the extraordinary muscularity with which true systems of breeding have endowed him, render him an exceedingly valuable animal for any work of labor and routine.



THE AMERICAN TROTTING-BRED STALLION SHERMAN.

The farmer who is looking forward to improvement in his stock, must be careful in making selection of his breeding animals, and, herein, it is of the utmost importance that the sire chosen be an available, valuable, and in every respect, a choice animal, possessing individually and ancestrally the best qualities which the offspring is desired to possess. A type of this kind of sire, a thorough exponent of the American race of trotting horses, is the stallion Sherman, owned by Messrs. H. C. Jewitt & Co., and whose portrait we present to our readers. Sherman combines, in excellent form, the noblest strains of the best and greatest bloods of the Republic. His sire was the unsurpassed stallion George Wilkes, which descended from an union of the Hambletonian and Clay lines, and his dam was Lady Belmont, in whom, through her sire, Belmont, son to Alexander's Abdallah, were united, in repetition, the Hambletonian, Mambrino Chief, and imported Bellfounder lineages. He is fast himself, having a record of two minutes and twenty-three and a half seconds, and he comes of fast lines; he is well-sized, standing sixteen hands, and weighing twelve hundred pounds; he is richly colored, a clear, fadeless black-brown; his proportions are well-nigh faultless, and, although bold of movement, and very forcible, he is tractable, quiet, and patient of disposition.

Care of Work Horses.

Frequently the farm horse suffers from overfeeding, and from being worked on a full stomach; for farm horses eat all the time, and look lean and wire coated—two certain proofs of chronic indigestion. Horses which have passed many hours in work, when released from harness are allowed to drink all the water their exhausted systems crave for; then, with the material of a small iceberg in their distended inner organs, they are turned loose to further injure themselves by grazing in the pasture; or, if the farmer is well to do, they go to the barn, and there, tormented by flies, mosquitoes, and other winged pests devour a carelessly prepared ration, after which the remainder of the night is passed in stamping and fighting insects. Farm horses are overfed, commonly, insufficiently groomed, and never judiciously either housed or clothed. In summer, farm work ought to commence with the rising of the sun, and cease at noon, when men and horses should seek the friendly shelter of the house and stable. The horses just from the field ought then to be stripped of all harness, have their eyes and nostrils washed out, the marks of the harness also washed off, and then be well rubbed with a "wisp"—which simple and inexpensive stable implement is far better for the horse than is a brush, whose coarse stalks irritate the skin and temper of the suffering beast. The wisp soothes and causes a healthy action of the skin, when the horses have been thus attended to, and they have cooled off. Horses should have, if in full work, a blood-warm drink of oaten meal or linseed gruel; sometimes one, sometimes the other; two gallons full will suffice at a time, and one pint of either sort of meal properly steamed is abundant for the ration. Having drank, allow the horses to eat slowly from the *floor* a small lot of sweet hay, of last year's crop—(hay is not fit for horses the year it is cut)—then feed oats crushed and mixed with cut hay, if the horses are used only for slow work, but if used occasionally as roadsters, then omit the cut hay, as it tends to put up fat rather than muscle. Having placed the food before the horses, perfect quiet should be observed; then at four in the afternoon, if farm operations require the horses thus cared for, they will be fit for two or three hours' work, and will seem just as though not worked for eight hours in the morning. At night one gallon of the same drink and another feed, as before, will suffice to keep horses well and in perfect health. This division of hours must be changed in winter, when horses require a small drink, and a moderate feed before going out for work. Once, or at most twice weekly, a warm, comforting mash should be administered. Now-a-days good wheaten bran is as scarce as "The Dodo," but if it can be procured, no other form of grain food is better; in its absence, a small feed of boiled potatoes and a few boiled carrots, mashed while quite raw, but not pounded into a pulp or paste, will form an excellent substitute.

Horses located far inland, will require access to salt. This is best effected by placing within their rack a lump of rock-salt, which they will readily learn to lick. Horses near the sea-coast do not require this attention. Never wash a saddle or harness gall with pickle—it is an atrocious piece of cruelty. Wash off saddle and harness marks with, as before said, water of moderate temperature; keep the fittings scrupulously clean and well suited to the individual horse who works under them, and there will be no galls to cure. Procure the best oats and hay, then feed with discretion.

Farmers' Encampments.

D. D. T. MOORE.

In some of the Southern States "encampments" of farmers are now being held. The objects, as announced, are substantially as follows: To hear addresses from practical men who have given special study to some particular branch of agriculture; to see in actual use the latest improved farm machinery, which will be exhibited by manufacturers from every section of the Union; to exhibit and sell or exchange their stock—horses, cattle, sheep, swine, etc.; to aid farmers who have not yet secured improved domestic animals, by showing them fine specimens of all the different breeds, and in this way encourage spectators to "get the best" for their own use and breeding purposes; and to stimulate and strengthen the farmers' organizations of the South by putting new energy and determination into the breast of every rural citizen who attends the encampment. There are no admission fees to the grounds, nor any charges on the exhibits of stock or farm products made by farmers, and only a very moderate charge on exhibitions of implements and machinery.

These encampments strike us as likely to prove very beneficial to the farming interest. If properly managed, they can scarcely fail of being instructive and useful to the rural communities in which they are held, and indeed to all participants—speakers and hearers, exhibitors and spectators, and sellers and buyers. They combine the prominent features of farmers' institutes and clubs, agricultural exhibitions, and also of the sale or exchange fairs so common and popular in Great Britain. The results of these novel assemblages will naturally be awaited with great interest, and if they shall prove as beneficial to the rural people and communities of the South as is anticipated, farmers' encampments will doubtless soon be introduced in other sections of the Union and also in Canada. The plan certainly seems feasible, and if it shall be carried out judiciously—without the contaminating adjuncts and influences of liquor selling, horse racing, gambling, etc.—it will naturally be recognized as worthy of adoption by earnest friends of agricultural improvement in various parts of the continent.

Some may think that the plan is not practicable, that it undertakes too much, or to do too many good things at once. But this objection is hardly valid. True, perhaps all in attendance at an encampment might not be able to witness every feature; but some could manage to hear the addresses, see the exhibition, and also be benefited by the sale or purchase of animals, implements, or the like. Others might be well paid for attending an encampment by the benefit derived from some one of its prominent features—either the addresses, the exhibition proper, or the sale and exchange department. Hence, while we may be mistaken as to its practical working, we are inclined to believe the "Farmers' Encampment" a good institution, and that our Southern brethren are entitled to special credit for its inauguration as a factor in promoting the cause of industrial improvement, and the elevation of those engaged in agricultural and kindred pursuits.

If any object that encampments might interfere with agricultural fairs, or be superfluous in sections where the latter are held, our reply is that little or no harm could be done in that direction. Indeed, there is no danger to be apprehended from well-conducted agricultural exhibitions, discussions, etc., anywhere, and the more organizations and displays we have calculated to promote rural progress and improvement, the better it will be for all engaged, or specially interested, in the leading industrial occupation of the country. Instead, therefore, of objecting to farmers' encampments as superfluous, or an unnecessary innovation, let them be encouraged—at least until they shall, after a fair trial, be found wanting. And should they prove as interesting and instructive to participants and the public as many expect, their usefulness in facilitating the progress of agricultural improvement will ere long be such as to render them influential adjuncts of other and well-established rural organizations, with which they may appropriately co-operate.

Military encampments are very useful as instructors of our citizen soldiery, and they are generally popular. But agricultural encampments, for the instruction of myriads engaged in the peaceful art of husbandry—which "supplieth all things necessary for food," and also clothes the world—may be rendered much more beneficial, and ought to be by far the most popular, at least in every fertile and cultivated section of this now quiet and harmonious rural Republic. The former teaches the art of war, the latter that of production, the concomitant of peace and prosperity. One tends to destruction, while the other indicates salvation—the saving and enriching of both the people and the country.

Water Supply on the Farm.

HENRY STEWART.

A copious supply of pure water is indispensable on every farm. This is one point to which particular attention should be given in selecting a farm. A clear, cool, running stream through the pasture and near the barn, is the most convenient source for the supply of the cows, but unless the farm controls the springs from which the stream issues, it is apt to be the worst of all. If the water is contaminated in any way, the quality of the milk will inevitably suffer; and many cases occur in which a dairyman, suffering from supposed mysterious trouble with the milk, and the butter or cheese made from it, has at last found the cause to be impurity in the water drank by the cows. Moreover, a large quantity of water is required in a dairy for cleansing the pans, and if this water is not pure, the very source of the supposed cleansing brings impurity into the dairy. The writer's supply of water was procured from springs which were opened in the bottom of a slope between the house and barn, by digging three or four feet down to a bed of fine clean sand and gravel; when the water immediately flowed out over the brim and down to a small spring stream in the bottom, which was fed by a large number of bubbling springs in its bed. Such a source as this, conveniently close to the barn, and not so low that it can not be brought up in pipes by means of a pump, is the very best; as the water is pure and cool in summer, and warm in winter, and in unlimited supply at all seasons in the year. The manner in which this supply of water was made available is as follows: A reservoir or tank was cut out near the foot of the slope sufficiently deep to hold an abundant stock, and to secure an even temperature, which averaged from forty-eight to fifty degrees in midsummer, and forty-five to forty-eight degrees in midwinter. The pool was lined with a wall of stone laid closely and covered with a small building for protection. Other springs were opened and walled in the same way, and arched over with stone, after providing a safe outlet with drain tiles, and an air-trap to prevent access of any small insects or animals. Pipes of galvanized iron were laid from these springs in trenches three feet deep, so as to be safe from frost, and to preserve coolness in the hot weather, and connected with pumps in the house, stable, barn, and barnyard. Where the height of the hill-side was too great to permit the use of a common suction pump, a dry well was dug to a sufficient depth, viz. eight feet, and the pipe was carried to the bottom of it and connected with a force pump, by which the water could be carried by means of a hose to any part of the yard or stables. A nozzle attached to this hose made it easy to throw a stream of water over any of the buildings, a most useful thing in case of fire, or for washing the stable floor, and other desirable purposes.

Where springs of this kind are not available, common wells are next in value. But as wells are quickly contaminated by drainage from the surface, when in or near barn-yards or stables, it is advisable to have the well for use in a dairy at some safe distance from the stable and yard. It is only a question of time when the percolation of water fouled by the manure in a barn-yard, constantly leaching by the rain, will reach the well; and though the water is filtered to some extent by its passage through the soil, yet in time a filter becomes fully charged with the sediment and cannot act any longer.

Cattle from Divers Lands.

The reader will observe wide discrepancies between the types of cattle of which our engravings on the opposite page present portraits, re-engraved for the *American Agriculturist* from the Secretary of State's Report on Cattle and Dairy Farming.

Figure 1 illustrates the Normandy breed, which is found in the Departments of Seine-Inferieure, Orne, Manche, Calvados and Eure, in the French Republic, a sleek, attractive beast, whose good qualities of to-day are results of ages of careful breeding and management. Normandy stock supplies the Paris markets with the largest beeves sold therein, one of which, an ox of six years, weighed on the hoof 4,335 pounds, and another 4,185 pounds; large bones, however, detract from the net value of the race as meat producers, and, hence, their reputation for excellence may be held as depending upon the capacity of the cows of the blood for dairy purposes.

This is extraordinary, as regards the milk yield, which is said to average no less than 3,000 quarts per year throughout the departments named, which constitute what once was Normandy. It is well known that great milkers seldom are to be distinguished for their butter making, but the "Cotentine" family of the Normandy race is deemed an exception to this rule.

Figure 2 is the portrait of a modern Brazilian cow, descended from the old native race of that South American Empire. This latter sprung from the stock brought in from Spain and Portugal when the Conquest was effected, and is interesting to us chiefly because of its similarity to the native animals of Texas, New Mexico and California. Very masculine in appearance about the head and shoulders is this Brazilian cow, and her measurements do not belie that appearance, for she stands an even fourteen hands high, and her weight is nine hundred pounds. Yet she has some good traits as a cow, notwithstanding her lack of promise in that direction, for it may be acknowledged that she can yield twelve quarts of milk per day.

From the exponent of fair Normandy, shown in fig. 1, to the types which are disclosed in figs. 3 and 4, is a stride so long as from France and the British Channel to Eastern Russia, where civilization is yet in its swaddling clothes, and the cattle are unmistakable evidences of this fact. These unhappy looking animals come from the Perm Government of Russia proper, an immense and largely peopled territory; but the farmers are held firmly bound in the chains of ignorance and lack of enterprise. The country ought to produce good stock, for the southern portions of it are fertile, and its whole extent is suitable for pasturage.

What greater contrast can one desire to give the highest proofs of how much civilization has done for cattle development, than is afforded when these scraggy, ugly cattle of Russia are placed in comparison with the fat and comfortable ox from France, and both types are contemporary.

STRIPPING THE LEAVES OF NURSERY TREES.—In some seasons the leaves remain upon nursery trees until long after they should be packed and shipped; in such cases the nurseryman strips off the leaves. We are occasionally asked if stripping the leaves does not injure the tree. If the leaves will part from their hold by merely drawing the branch through the hand, they are of no further use to the tree; they have already made preparation to fall, and will do so in the first storm. Careful stripping can do no harm, while it allows the purchaser to receive his trees much earlier. When the leaf is ripe, and has completed its season's work, it makes ready to drop from the tree, just as ripe fruit does.

TYPES OF CATTLE FROM DIFFERENT LANDS.

Re-Engraved for the American Agriculturist.

OUR BASKET.

Clubs can at any time be increased by remitting for each addition the price paid by the original members; or, a small club may be made a large one at reduced rates, thus: One having sent 5 subscribers and $6.00, may afterwards send 5 names more and $4.00, making 10 subscribers at $1.00 each; and so for any of the other club rates. Subscriptions can begin at any time, as every number of the paper is complete in itself.

Bound Copies of Volume 45 (for 1886), uniformly bound, in cloth, gilt backs, will be furnished at this office for $2. If sent by mail, $2.30. We can usually supply at same rate any of the previous volumes, *i. e.*, from volume 16 to 45 inclusive.

English Blue Grass.—W. M. Arnold, West Va. We know of no "English Blue Grass." The Blue Grass of this country, or Kentucky Blue Grass, is June Grass and Spear Grass in England (*Poa pratensis*). It succeeds best on lime-stone soils, and is one of our most valuable grasses. Blue Grass is sown in late winter and very early spring.

Wants a Fern Book.—C. H. Bunce, New Haven Co., Conn., is in the same "frame" with many others; he says he "does not know how he could get along without the *American Agriculturist*, having taken it for twenty years." We think the book that would best suit him is "Ferns in Their Homes and Ours," by John Robinson.

Sewing Machines.—Fred. Frink, a subscriber, writes us from Snohomish Co., Wash. Ter., Aug. 15th: "The High-arm Sewing Machine which I bought of you arrived safe and in good order, and I consider it my duty to acknowledge the fact that it far surpasses my anticipations, both in style, finish, and the quality of its work. It is in reality equal to machines which are sold here by agents for $50 to $65."

Home-Made Fodder Cutters and Pumps.—H. H. Staola, St. Landry Parish, La. Both fodder cutters and pumps are now to be had of any dealer in agricultural implements, and much cheaper than you could make either should we give you full directions for manufacture. In early times, when hardware stores and dealers in agricultural implements were not to be found in every village and city, home-made fodder cutters and pumps were often made by farmers, but all this is changed, for better implements of all kinds are on sale.

Use for Chip Manure.—G. E. Hedges, Burlington, N. J., has a lot of chip manure, about twenty loads, at the bottom of an old wood-pile, and asks us the best use to make of it. The best use to make of the material is as a mulch. If any fruit trees were planted last spring or last fall, or if currants, blackberries, or similar bushes were set out, give them a heavy mulching of the material on the soil over their roots. If such material be used for bedding animals, and then be taken to the manure heap, it may be used upon almost any crop. It will be especially beneficial for potatoes.

Capt. John B. Moore.—In the death of John B. Moore, of Concord, Massachusetts, which took place in August last, horticulture loses one of its most active followers, and the Massachusetts Horticultural Society one of its most energetic and progressive members. Always striving for improvement, he has left his mark upon a number of fruits and vegetables, of which he has produced several new varieties of value. He is best known to fruit-growers as the originator of "Moore's Early Grape," a seedling of the Concord, and superior to that in many respects. It is the many quiet workers, after the style of Mr. Moore, that give Massachusetts the proud eminence she enjoys in horticulture.

Alkali, or Alum Lands.—A. W. Cooper, Glynn Co., Ga., writes us: "Alkali lands are known here as alum lands. Last year I planted ten acres of the best land on the place to rice for dry culture, and there was no sign of alkali. This year the same field was planted water culture. After the water had been on the land about a month, a thick scum appeared on the lowest land, spreading rapidly over the field and smothering the rice. A ditch was cut across the adjoining bank, which admitted the flowing of a sheet of water over the ten-acre field. The alkali has disappeared, and has not returned since, and the rice is very good." The removal of the scum from the surface of the water in your rice plantation, by forcing it to flow off with a current, was probably the most economical system you could have devised for getting rid of it.

Sex in Melons.—A. W. Cooper, Glynn Co., Ga., informs us that a certain gardener in his State raises better watermelons than his neighbors because he plants alternate rows of male and female melon seed. We cannot understand how a man can plant alternate rows of melons with seed obtained from the two sexes of the fruit, as no male blossom of any of the melon family ever produces fruit. The male and female flower are always separate and distinct on the same vine, and it is only the latter which perfect fruit. There are, however, many persons who, having heard that there were two sexes of flowers in melons, think that both produce fruit, and we have heard dealers in our markets declare that they can readily pick out the different sexes in the ripened fruit. Of course these men know nothing of botany, or they would not show their ignorance by making such assertions.

Raspberry Leaves Dying.—Geo. A. Clarkson, Oakland Co., Mich. The leaves you send of the Shaffer's Colossal raspberry appear to be prematurely ripened, probably due to the long-continued high temperature of the passed season. The raspberries are indigenous to the cooler regions of North America, rarely succeeding under cultivation in the warmer, owing to this premature ripening or scalding of the foliage in summer. For this reason none of the red varieties succeed in the South, except at a considerable elevation above the sea. The very high temperature of the passed summer, with excessive atmospheric humidity, has been the cause of mildew and sun scald among several of our standard varieties of the raspberry. The results will be killing down of the canes next winter, as the wood cannot become fully ripened in the absence of healthy foliage.

Plant-Lice on Apple Trees.—H. M. Westbrook, Multnomah Co., Ore. From the brief description you give of the plant-lice attacking apple trees in Oregon, we conclude they are a species of *Eriosoma*, probably *E. lonigera*, a minute insect covered with a woolly, flocculent or cotton-like substance secreted from its abdomen. The eggs of this pest are usually laid in the axils of the branches, or in the crevices of the bark near the roots of the tree. This woolly apple tree louse is sometimes a great pest, and unless destroyed, sooner or later kills the trees it infests. By washing the stems and branches with strong potash water, then smearing every part with soft soap, whale-oil or other greasy substance, this pest may be eradicated. Emulsions made with kerosene oil and soap may also be used with excellent results, but strong alkaline solutions should be applied first. The ants which you see running over the apple trees, are merely seeking food from the plant-lice, consequently are not injurious to the trees.

Raising Pear Stocks.—R. A. Paisley, Ontario, Canada, writes us that his several attempts to raise pear seedlings for stocks have not been successful. The pear seeds sown in this country by nurserymen are nearly all imported from Europe; they often arrive in bad order, and when the seeds germinate the leaves of the seedlings are so frequently attacked by "blight," that many nurserymen prefer to import their stocks rather than to raise them. Of course success depends, in the first place, upon good, sound, plump seeds, and the seed-bed should be well worked, to insure a light porous soil to the depth of two feet; it should be well enriched to insure a rapid growth, especially with wood ashes, lime, and fine bone. If the seeds appear to be dry, it is well to mix them, before sowing, with twice their bulk of moist, not wet, sand and shovel them over occasionally. If the seeds thus treated plump out, and at length sprout, they may be sown with confidence. If to be worked with a horse cultivator, make the drills three feet apart, and scatter the seeds very thinly in the rows.

Squirrels and the Pears.—J. Wilson, Westchester county, New York, complains to us that the squirrels take off his pears, and cutting them to pieces to get at the seeds, are stripping the trees of their fruit. He does not say what kind of squirrels they are, but probably the gray squirrels. Few who have not experienced it, are aware of the mischief that squirrels and rabbits (hares) can do in a garden in the country. The burrowing squirrels that cause such havoc in California and Australia are destroyed by forcing fumes of burning sulphur into their holes, but these gray squirrels and rabbits must be shot or poisoned. Shooting is preferable, as dead squirrels and rabbits are most welcome on the table. If poisoning is resorted to, soak seeds of which they are fond in a solution of sulphate of strychnine, and place them where squirrels can, and domestic animals cannot, reach them. As to hares, so generally called rabbits, they gave us much trouble the past summer. Having several choice, imported pinks that we wished to multiply, we found that the "little brown rabbit" "made cuttings" of the stems before we could get a chance at them. Shot and traps were the only remedy.

Grass for a Name.—Mr. J. C. Johnson, Beaver county, Pennsylvania, sends specimens of a grass, of which he wishes the proper name, and some account of its value in agriculture. He obtained the grass from West Virginia, where it is known as "Randall grass." The grass is the "Tall Fescue," *Festuca elatior*. "The Meadow Fescue," formerly regarded as distinct, and called *Festuca pratensis*, is now considered as only a smaller form of this, the former growing three or four feet high, while the latter is from one to three feet tall, but as in botanical characters, as well as in feeding value, they are identical, it only leads to confusion to speak of them as distinct species. "Randall grass" is a very common name in Virginia, and farther South "Evergreen grass" is the popular name. As these names are in some localities applied to the smaller form, and in others to the larger one, much confusion results. Though this grass is common in pastures in the Northern States, it is rarely, if ever, sown there, but is introduced. In some Southern localities it has been sown with much success. We can only say now that it is regarded as one of the most nutritious and valuable of all grasses. To give a more full account is not practicable in a Basket Item, but we will endeavor to soon give a more extended description of this valuable grass.

When to Wean the Colt.—S. D. Matthews, Martin county, North Carolina. Thrifty colts are usually weaned at about six months' old. The mare, if kept for breeding, will then be nearly six months in foal. At this age, boiled whole oats, with a little wheat bran make a very good substitute for milk. Oats are the best grain to feed either colts or mature horses upon. Some get a habit of "hogging" their feed, and so, many of the oats being swallowed whole, pass undigested. This may be prevented by throwing a handful of smooth pebbles as big as hickory nuts into the manger, which compels the horse or colt to pick out his oats slowly, in which case they are well chewed before swallowing. Begin with half a pint of boiled oats and an equal quantity of bran three times a day, with grass or good sweet hay, and gradually increase the grain, according to age, size, appetite, activity, etc. Change to uncooked oats and bran after thirty days. Begin to handle at once. Put on a halter whenever the colt is fed, and keep it tied while feeding. Colts of the draft breeds may be harnessed and used at eighteen months' old, but colts of the breeds used for fast work, or ordinary road work, should not be driven before they are three years old—or better four, but they may be and should be harnessed and handled as young as two to two and a half.

An Improved Ox-Eye Daisy.—W. C. Mason, Bergen county, New Jersey, sends us some heads of flowers of the Ox-Eye Daisy, which are much finer in appearance than the usual form of the plant. Ordinarily the outer row of white florets, or rays, have a flat or strap-shaped petal. In the specimens sent, these, instead of being flat, are tubular, or trumpet-shaped, and two-lipped. This gives the flower an appearance of greater substance, and they are much fewer than in the ordinary form. Flowers thus modified are not very rare, as they are sent to us from various parts of the country nearly every summer, and are usually called "double flowers." They are certainly not "double" in the proper sense of that term, there being no increase in the number of the parts, but merely a change in the shape of the ray florets. We are asked if this variety can be perpetuated from the seed. This can only be ascertained by trial. Such variations are sometimes very constant, but generally they are not sufficiently well fixed to appear in the seedlings, and can only be propagated by division of the plant, or by cuttings. The common Ox-Eye Daisy has become singularly popular within a few years. Immense quantities are sold at the florists' stores, and it is not rare to see an elegantly dressed lady with a huge cluster, as a "corsage bouquet." Not only are they sold in summer, but they are forced and offered in the winter months. The forced flowers have a scanty, meagre look. Possibly the variety in question might be better suited for forcing in the window or greenhouse, than the common forms.

Cheddar Cheese.—Mrs. H. W. Dickenson, Huron Co., Mich. This is one of the finest English cheeses, and its high quality is owing mainly to the great care with which it is made. It is generally sold in small sizes, and is characterized by its mildness and purity of flavor, mellowness and richness under the tongue, long keeping qualities, and solidity or freedom from holes.

Quinces in Connecticut.—Mr. F. E. Heath, Litchfield county, Connecticut, informs us that in his section the quince crop will not be large, the trees having made too much wood and suffered from blight. His orchard consists mainly of Meech's Prolific. The Champion he considers too late; he has a high opinion of the Rea. Mr. Heath is now making preparations for irrigating his orchard and farm so as to be able to defy drouth. We shall be pleased to hear of his success.

Canning Succotash.—G. D. Archer, Fairfield Co., Conn., asks us if we can tell him how to put up succotash in somebody's glass jars, so that it will keep. We doubt if it can be done. Green corn, peas, succotash, etc., are only safe when soldered up in tin cans, and cooked in them for eight hours or more. We have tried all the methods with glass that have been recommended, with only utter failure.

Leghorn Fowls.—F. W. Chapman, Sullivan county, New York, wishes to engage in egg-farming. He finds the Leghorns, the best of the non-sitting breeds, have such large combs that, in his severe climate, they are quite sure to be frozen every winter. This difficulty may be obviated by "dubbing," or cutting off the combs and wattles. This should be done when the birds are about two-thirds grown, and if sharp shears are used, very little pain or blood will accompany the operation.

Keeping Apples and Pears.—E. Lewis, Jr., New Haven Co., Conn. Apples, pears, and other similar fruits, are preserved in large quantities by what is called the cold storage system. A few years ago, large sums were invested in buildings for preserving fruit under this system, and, we believe, most of the capital invested in them was lost, as fruit out of season did not command a price commensurate with its cost. Winter apples and pears are now preserved in cool, well-ventilated rooms, without the addition of ice or other refrigerating processes. Yet if it is deemed desirable to use ice, a simple arrangement may be made to serve the purpose.

The Death of Prof. Baird.—Prof. Spencer F. Baird, the U. S. Commissioner of Fish and Fisheries, and Secretary of the Smithsonian Institution, died in August last. In these two offices he occupied positions in which he exercised a wide influence in showing the application of science to the practical affairs of life. His work in the domain of pure science has been equalled by few men who have ever lived, and when we contemplate the number of volumes he has produced, all ranking among the highest, it seems incredible that one man should have done so much. In his work as fish commissioner, while confessedly the leading authority in the scientific aspects of that branch of science, his practical work in the protection and increase of food fishes has been, from the first, a public benefit. His labors were not confined to ichthyology alone, but his positions allowed him to foster all branches of science, which he did with most impartial liberality. We have had more showy men of science than Prof. Baird, but none who can show a greater amount of important work accomplished than he.

A National Association for the Preservation of Agriculture and Other Industries.—Several documents with the above headings have reached us from England, which set forth that not only agriculture, but various arts directly related to agriculture, are in a condition bordering upon ruin, while several branches of industry are practically extinct. Formerly there were twenty-six sugar refineries in London; of these, twenty-one are closed, "and the days of the remaining five are numbered." The flour-milling industry is threatened with extinction, and so with many others. This sad state of affairs is calmly but firmly stated. The cause of all these troubles is summed up as follows: "The present condition of agriculture, and that of many of our manufactures and trades can be easily and directly traced to the continued free importation of the productions of foreign labor." In other words, to free trade. It is proposed to form a National Association, with its headquarters in London, and a branch in each county, the object being to enlighten the voters as to the cause of the present state of affairs, and the remedy. The most encouraging results have thus far attended the efforts of the "Council" to awaken an interest in all parts of the country, people of all shades of political opinion joining the branch associations. There are evidently very earnest men promoting the movement, and we shall watch the outcome of their labors with much interest.

Transplanting Evergreens.—C. W. Shane, Washington Territory, writes us: When residing near Los Angeles, California, I learned to remove orange and other evergreen trees; and since living in Washington Territory, I have found that our beautiful Thujas and Yews can be as readily and successfully transplanted as the California orange trees. The work is generally done in midsummer. First the holes are dug, and a large bucket of water kept in readiness near each hole. Then a circle, corresponding in its diameter to the size of the tree to be transplanted, is dug around it. The tap root is then cut off with a sharp spade, and the tree is ready for removal. Cover the block of soil with a sack until carried to the orchard or place prepared. Put the water in the hole, set the tree in the wet soil, and fill the hole half full with soil, pour in another bucket of water, and fill full, and round up with earth. The work must be done so that air cannot get to the fibrous roots, else the tree will die. The soil must be compact, so as to enclose these tender roots, and success is insured. If these directions are followed, evergreens may be successfully moved at any season of the year.

Insects Boring Into Vinegar Barrels.—"Inquirer," Orange county, New York, writes us: "I have a number of barrels of hard cider turning into vinegar. Some of them leak through holes of about the size of a pin, in the staves and heads. They appear to have been bored through from the outside, as I first noticed a little hole with fine sawdust around it, and in a day or two it got through, and the barrel began to leak. Can you tell me what bores the holes, and suggest a way to keep the borer out of the barrel?" There are several species of beetles, the larvæ of which attack vinegar, cider and beer barrels, boring small holes through the staves, thereby causing leaks. These pests belong mainly to the *Scolytidæ*, a family of small cylindrical beetles all feeding either upon dead or living wood. The one attacking your vinegar barrels is, probably, the *Cryphalus materarius*, which has been known to empty wine casks, and entirely destroy the staves. The *Tomicus monographicus*, in India, has been known to drill more than one hundred and thirty thousand holes in a single casks. Painting the outside of the barrels with mineral paint and boiled oil will prevent the depredations of these cask-boring insects.

Agricultural Development in Japan.—Mr. Kizo Tamari, a member of the commission which represented the Japanese government at the New Orleans Cotton Exposition three years ago, has called on us prior to his departure for Europe. He is the only member of the commission who has not already returned to Japan, having been appointed by his government to study scientific and practical agriculture in America. For this purpose he has spent six months at the Illinois Industrial University, one year at the Michigan Agricultural College, six months at the N. Y. Experiment Station at Geneva, and about a year in traveling. Mr. Tamari informs us that Japan is making wonderful progress in the adoption and development of modern agricultural methods. The Imperial College at Tokio has already six hundred students, and forty professors and assistants. The studies are divided into three separate departments: First, Agriculture proper; second, Forestry; third, Veterinary Science. Each of these departments is again divided into a scientific and a practical section. To enter any of the scientific courses, the students have to pass a severe examination in the English branches. All the lectures are delivered in the English language, and professors and students wear modern clothing, which, Mr. Tamari thinks, will in time become adopted throughout Japan. Most of the students in the classes of practical agriculture are sons of the wealthiest and most influential farmers of the Empire. All the expenses for the maintenance of the college are paid by the government, and tuition is entirely free, the students having nothing to pay but a moderate price for their board. In former years most of the professors at the college were foreigners, but the present plan is to send the most intelligent youths of the Empire to America and Europe, to let them acquire all the information they can, and bring it home with them to teach it to their own people. This certainly appears to be the wiser policy, as those born in the country generally understand the needs of its agricultural interests better than foreigners. If all the young men sent out by the imperial government are as intelligent students and quick observers as Mr. Tamari, Japan will not be long without as efficient teachers of agriculture as can be found anywhere. We extend to him our best wishes for a pleasant voyage, and, on his return to his native country, the deserved appreciation of his government for which he has labored hard.

Animal Ailments.

Dog With Overgrown Claws.—Mrs. L. Robinson, Alleghany County, Pennsylvania, has a pet dog whose claws are growing into the soles of his feet, causing soreness and lameness, and asks for a remedy. This trouble is caused by not giving the dog sufficient exercise out of doors, where he can dig in the ground and otherwise wear his claws down. The ends of the claws should be cut off with a pair of sharp nippers. If there is much soreness or suppuration on the sole of the foot, wash frequently with warm water.

Fistula in Teat.—When an opening forms in the side of the teat, through which the milk escapes during the milking, it is known as "fistula." It may be removed by carefully dissecting the skin around the opening, and into it, as far as possible, when the opening is enlarged by a slight cut at each side. The edges of the wound are then drawn together by stitches, a safe one being put through the part where the fistula existed. On healing of the wound, the opening is closed. The operation must be performed when the cow is dry.

Ringbones, Sidebones.—M. L. Delavan, Westchester County, New York. Ringbones and sidebones differ only in the seat of the disease, and are generally due to strains and over exertion, but may also result from other injuries, from rheumatic disease, or from abnormal nutrition. Inflammation of the periosteum, the membrane covering the bones, marks generally the beginning of the trouble. Gradually soft matter exudes which becomes hard and bony. In the progress of the disease the entire surface of the pastern bones may become involved and result in a general deposition of new bony matter. In the first stages, the treatment should be of a soothing character, rest and hot poultices, to which laudanum and camphor may be added. In advanced cases, blisters and firing are resorted to. Complete cures are rare, yet with proper treatment and rest horses afflicted with ringbone may recover sufficiently to become serviceable. With young animals the prognosis is more favorable than with older ones.

Rickets.—This disease is produced by an imperfect nutrition of the bones of young animals. Sheep, pigs, foals, and puppies suffer from it more than calves. It is also common in the human family. In foals whose dam is worked hard, and which are not allowed to suck often enough, and in animals born in menageries, it is of common occurrence. Animals born with it will generally die, death being preceded by paralysis. In certain families the affection is hereditary, but anything that undermines the general health may develop it in an animal predisposed to it. The first indications of rickets are a swelling of the bones, and inflammation of the periosteum. Afterwards the bones, especially those of the legs, bend and become distorted. The chief treatment must consist in removing the cause of the malady, by giving nutritious food, free access to its dam, tonics, lime water, bone dust, iron, cod-liver oil, and laxatives when required. A dry, airy sleeping place should be provided, and access to open air, sunshine, with gentle exercise. Where the legs are crooked, suitable splints and bandages should be applied.

Signs of Tuberculosis in Cows.—R. Middleton, Montgomery Co., Pa., desires to be informed "whether it is a sure sign of tuberculosis if a cow coughs frequently when in the stable during winter, and is entirely free from cough out in the field during summer." Our answer to this inquiry is, no. Cough may result from other diseases than tuberculosis. At the beginning of consumption there is some fever, the ears and horns of the animal become hot, the nose dry, and there is a slight cough, deep and dry. For a while the animal may not lose in flesh, but gradually it loses the pliancy of its skin, and becomes "hide bound." The milk becomes watery, poor in quality, and unfit for use. The joints become enlarged, causing stiffness or lameness of a shifting character, showing itself in one leg to-day and in another to-morrow. Generally the glands of the neck become enlarged, and the breath offensive. As the disease progresses, the cough, and pain upon pressure over the ribs increase; the animal becomes emaciated, the coat staring, the eyes dull and sunken; there is discharge from the eyes and nose, and in some cases severe diarrhœa sets in shortly before death. More frequently the animals die from suffocation. But the only positive diagnostic symptoms of pulmonary tuberculosis are those which present themselves by examining the lungs of the affected animal. The peculiar dull sound, and the absence of the respiratory murmur, are found in no other disease, and furnish an unmistakable guide to the experienced ear. Recovery is very rare, and when it occurs the animal is generally too much weakened to be of use.

The Tall Fescue and Meadow Fescue.

There are a number of grasses highly valued and generally cultivated in Europe that are rarely or never sown by our own farmers; conspicuous among them is the Tall Fescue. Formerly the Tall Fescue, *Festuca elatior*, and the Meadow Fescue, *F. pratensis*, were considered to be distinct species, but the best botanical authorities of the present day regard the last named as a variety of the former. The typical form of the Tall Fescue (*F. elatior*), has stems three and four, and sometimes five feet high. As shown in the engraving, the panicle is narrow and erect, and short branches upon which are crowded the spikelets of five to ten florets each. The principal differences between the variety *pratensis*, or Meadow Fescue, and the type are its smaller stature (one to three feet, and a closer panicle, with smaller spikelets). In proof of the view that the Meadow Fescue is only a form of the Tall Fescue, it is stated that if the seeds of the Mea-

THE TALL FESCUE.

dowFescue are sown upon stiff, clayey soil, the product will be the Tall Fescue. The variety Meadow Fescue is known in Virginia as "Randall Grass," and in South Carolina, and some other Southern States it is called "Evergreen Grass," as it remains green under the snow all winter, giving the sheep very early herbage as soon as the snow disappears. Though very rarely, if ever, sown in the Northern States, it is extensively naturalized, at least in the older states, and is found, especially the smaller variety, in meadows and pastures where it "comes in" very freely, and in old pastures it often forms a considerable portion of the turf. In its nutritive value, this grass ranks among the highest, whether as pasturage or made into hay. Its yield of hay to the acre is equal to that of any other grass. While some claim that it is best suited to low moist ground, it flourishes well on dry uplands and is sown in the mountains of Virginia and North Carolina for sheep pasturage, for which purpose it is valuable above all other grasses, as it affords them herbage all through the winter. The roots are fibrous and extend to a great depth, enabling the grass to withstand drouth better than shallow rooting kinds. In England, the typical Tall Fescue is very apt to have its ends ergotized, on which account, seeds imported from Germany and other continental countries are the only ones that are regarded as safe to be sown. In view of the general European testimony as to the value of the Tall Fescue and its variety, and the experience of the few who have sown it in the Southern States, it appears to be a grass eminently worthy of the attention of our farmers, the majority of whom sow Timothy, as if it were the only grass worthy of being cultivated.

The Cyclamen.

PETER HENDERSON.

Many amateur florists have an ambition to grow this beautiful bulb, and it is often done well, even in an ordinary sitting-room, though as it requires a season of rest, it is often injured by this not being given properly or at the right time. Cylamen bulbs in the dry state can be procured usually from seedsmen in September or October. When received they should be potted in five, six or seven inch pots, according to the size of the bulb; have the pots well drained, and filled loosely to the top with rich, soft soil; such as is composed of one third leaf mold is best. Press the bulb into the soil so that its surface is level with the soil, give it a good watering, and then place it in some dark closet or cellar for three or four weeks, when it may be brought into light. The bulbs already started can often be bought from the florists, when they may be placed among a general assortment of plants that are kept at 50 degrees at night, with 10 to 15 higher in day time. The Cyclamen flowers usually from January to April; when done flowering, the plants should be dried off by laying the pots on their sides, say from May to September, and then started again.

Harvesting and Marketing Quinces.

W. W. MEECH.

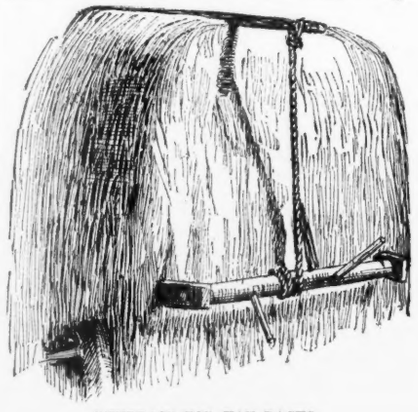
For marketing as well as for house use, quinces should not be gathered until fully ripe, as they do not ripen up in color and flavor like apples, pears, and peaches, after they are picked. If gathered too early the quince is comparatively worthless. If the cultivator of the quince does not desire at once to dispose of his fruit, the later ripening sorts can be kept for a long time by being carefully spread out in a cool chamber till the frost necessitates their removal to the cellar. With proper care quinces may be kept till April in common cellars. Of course with retarding-house conveniences, all fruits may be kept at will. As a rule it will be found that the best time to use or sell quinces is soon after they are ripe. If kept too long, the demand for them, as with most other fruits, ceases, and they are not sought after.

There is always a market for quinces in the large cities, and, if the quality is good, at paying prices; but often the best market will be in some of the smaller cities and towns. The producer will find it advantageous to look out for such markets before the fruit is ripe, so as to know just where to send it when ready. That class of customers always wants the best fruit, and is willing to pay for it. The best is found in the end to be the cheapest.

The stave basket, being smooth inside and therefore less liable to bruise fruit, is preferred to the old spint or chip baskets. The size used to be for five half pecks, but now it is generally but four. The old standard crate for shipping fruit was eight inches wide, fourteen deep, and twenty-three and a half long, outside measure. The ends and partition were cut of three-quarter inch pine, seven and a half wide by fourteen inches long. The bottom and top were six and a half wide, and three-eighths of an inch thick. The sides were of four slats the same thickness, and two and a half inches wide. The whole crate consisted of thirteen pieces, often with a planed end for convenience of marking. These proportions are varied, some being wider and shorter, or narrower and deeper, according to the choice of the shipper or maker. Crates being seldom returned as "*empties*" they are about enough less in capacity than the bushel to cover the cost of the crate. Baskets are returned.

Device for Holding a Load of Hay.

When a load of hay or straw has to be carted some distance over uneven ground, some arrange-



WINDLASS FOR HAY RACKS.

ment for holding it securely to the wagon is necessary. The use of the pole over the top of the load, held in front by the rack's ladder, and drawn down behind by a rope tied to the rear cross-piece is well-known. The device shown in our illustration is an improvement upon this, and consists in making the rear cross-piece a windlass of about eight inches in diameter. Through two holes, bored through it at right angles, stout iron rods, thirty inches long, are passed, and secured by nuts. By using these rods as levers, the pole can be drawn down very close, and may be held in place by a piece of wood several feet long, inserted in a hole in the windlass, and resting against the rear of the load which it also holds in place.

An Ingenious Tail Holder.

Mr. W. D. Matthews, Centralia, Washington Territory, sends us the illustration of a simple device

A SIMPLE TAIL HOLDER.

for holding a cow's tail during milking, and writes: "I have a rag or cloth about two feet long, or a little over, and about one foot wide, that I use for wiping the teats. Tie one end in a single knot around the cow's tail just above the brush, carry it down inside of the cow's leg, and under the knee of the milker, as seen in the illustration, and the cow's tail is firmly held out of harm's way."

The Pure-Bred Lincoln.

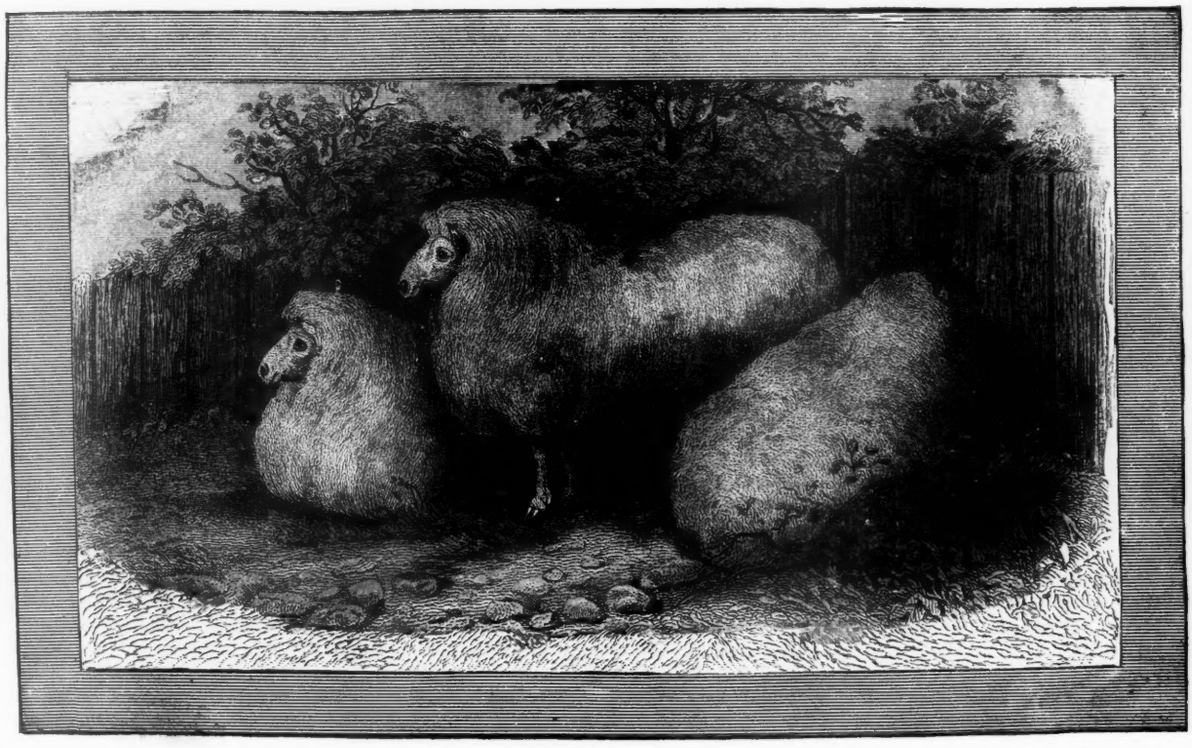
For contrasting its character with that of the Leicester-Lincoln, the perfect type of which was illustrated in our April number, we give herewith portraits of purely-bred Lincoln sheep. The originals of these portraits were extraordinary prize winners, sustaining the honor of Longwools against all comers, during a series of fairs and exhibitions. These animals were from the flock of Mr. John Byron, of Steaford, near ancient Boston, in Lincolnshire. Their owner has given the following account of their breeding, whence the purity of their descent from the ancient blood of the shire is plainly indicated.

"It is," wrote Mr. Byron, "as near as I can ascertain, a little more than an hundred years since my grandfather began farming at Tathwell, near Louth, under the grandfather of my present landlord, Henry Chaplin, Esq., M. P., of Blanking Hall, Lincoln. He bred for a number of years—I believe for forty—from the old Tathwell stock, so well known in Lincolnshire, and continued to do so up to the time of his giving up business, when the flock came into the hands of my father, who kept breeding on in the same way, using occasionally a few sheep from the Kirkham flocks, of Hagnaby, and Biscathorpe, near Louth. When I came to Kirkby Green, I brought a flock of ewes with me, selected nearly entirely from my father's and brother's flocks, and I have crossed these with rams hired from Mr. C. Clark, of Scopwick, as I have, also, used a few sheep from the old Tathwell and Biscathorpe flocks." Thus, we are informed of the thorough purity of these sheep, in the line of their coming from the old Lincoln, and, therefore, cannot but be interested in their success as competitors for prizes. This was their roll of winnings: Brigg Meeting, Lincolnshire Agricultural Society, first prize, ten pounds; Oakham Meeting, Rutland Agricultural Society, first prize, ten pounds; Benningham Meeting, Midland Counties Society, first prize, fifteen pounds—with silver medal, and linen and woolen draperies prize, ten pounds; Islington Meeting, Smithfield Club, first prize, twenty pounds—silver cup of twenty pounds, against Leicesters, Cotswolds, other Lincolns, Kentish, or any other Longwools—and champion plate, fifty pounds, as best pen of sheep at the show; Steaford Fat Stock Show, first prize; Leeds Fat Cattle Show, first prize, and silver cup, as best pen of sheep in the show. At the time they were shown in London, these sheep were twenty-one months old, and weighed eight hundred and twenty-nine pounds, and their magnificent fleeces made them easily and pronouncedly superior to all others in competition, as their prize memorandum evinces.

The Lincolns are hardy, tractable, and excellent mothers and nurses. One characteristic, wherein they differ greatly from other sheep, is their considerable weight of collar, yielding one and a half pound of wool. They are of large size, and heavy in the carcass. The average weight of their fleeces is ten pounds. Their wool measures sixteen to eighteen inches in length; is clear, beautiful white.

Leicester and Warwick breeders have improved both the quality and value of the carcasses of their sheep of Lincoln, but the fleeces suffered while that bodily advancement progressed. Their long wool was the chief honor of the Lincolns, and their fleeces were unrivalled in kind, not remarkably fine, but, for combing purposes, in high estimation. For centuries they supplied the looms of Norfolk, which was long famous as the principal seat of worsted manufacture, the very name of which found its derivation in the parish of Worsted, Norfolk, where woolen stuffs and twist first were manufactured.

There is some distinction drawn by the trade in the different wools of Lincoln; the sheep bred on the marshes have the longer, heavier and coarser fleeces, while those from the downs (reared chiefly upon artificial grasses), the finer and shorter. The County of Lincoln may be regarded as the mother-country of long-wooled sheep, as Lancashire has been that of long-horned cattle, and that the power of the soil and blood has not departed, is manifest enough in presence of such products of it as our illustration presents.



PURE-BRED LINCOLN SHEEP.

Engraved for the American Agriculturist.

HUNTERS AND CARRIAGE HORSES.—These are bringing extra high prices in England, and will continue to do so for a long time to come. It would cost us but a little more to breed and rear them for exportation, than it now does for a common plug; and at four years old, they would bring from five to ten times as much when sold. At a late sale of this style of horses at Tattersall's auction in London, fourteen head were knocked down at from two hundred and fifty-three to five hundred guineas—twelve hundred and sixty-five to two thousand five hundred dollars—each. Since the enlargement of steamers and their improved fixtures, horses can be transported across the Atlantic with much more safety, and at half the price it used to cost a few years ago, thus making it quite economical in sending them abroad.

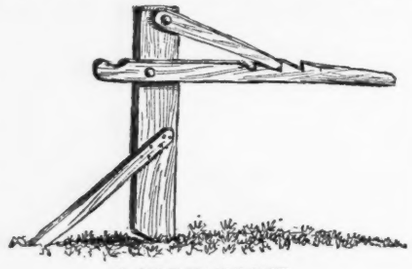
Soiling in the South.

In the Southern States soiling can be carried on with the greatest profit. There are several crops that may be grown, which are not suitable for the North. Pearl millet, teosinte, cow peas, millet (this thrives especially well), Bermuda grass (this affords the very best summer pasture and if fertilized, yields an enormous quantity of feed), *Festuca pratensis* (Meadow fescue, Randall grass or Evergreen grass) grows luxuriantly, and makes the best pasture; rye may often be pastured all the winter; the native wild grasses, crab grass, *Eleusine Indica;* finger grass (*Panicum sanguinale*), barn-yard or door-yard grass (*Panicum Crus-galli*), sprouting crab grass (*Panicum proliferum*), Texas millet, *Panicum Texanum* and the common (far too common) beggars' ticks (*Bidens frondosa*), and the (also too common) beggars lice (*Desmodium molle*), all furnish a most abundant pasturage. The large amount of wood pasturage, containing much grass of various kinds, and a wealth of leaves of young timber, more nutritive than any grass or forage plants, also affords excellent subsistence for a large part of the early portion of the year; while for winter feeding with hay and other fodder, the abundant sweet potato and the cheap cotton-seed meal make the very best substitute for the Northern roots and grain feed. Butter can be made in the South for ten cents a pound, more easily than it can be for twenty cents in the North, the markets there are far better, and higher prices can be obtained than in any part of the North, excepting the "fancy" prices paid in some of the largest cities.

Linseed and Cotton Seed Meal.

Linseed oil meal is now made by what is known as the new process, or by extracting the oil by means of benzine, or naphtha, by which the oil is practically all removed from the seed. The old process of pressure between heated plates left eleven to fourteen per cent of oil in the residue. As linseed oil has a laxative and most excellent effect upon the digestive organs, so the old process meal was a useful food for fattening cattle; but was not a desirable food for dairy cows on account of the result on the butter, which was white, soft, greasy, and of a flat oily flavor. The new process meal is free from some of the objectionable features of the old process meal, and to some extent is useful in dairies, but after frequent attempts to use it with satisfaction, we abandoned it in favor of cotton seed meal. At thirty dollars per ton—its present value—it is much dearer than several other foods, which are preferable in other ways, as well as for their cheapness.

Cotton seed meal, when used in moderation, is a very useful food for dairy cows. It is the reverse of laxative, and tends rather to costiveness. This, however, gives it an especial value when cows are upon grass, or when it is mixed with bran. When it was first introduced in the Northern States as a food for cows, twelve years or more ago, it was sold at eighteen dollars per ton, and was an exceedingly cheap food. Since then it has become widely popular, and has advanced in value fifty per cent. Still, for the nutriment contained in it, it is yet cheap, being valued for its nutritive



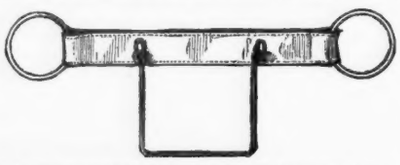
A GOOD WAGON-JACK.

elements at forty-six dollars per ton, as compared with the best clover hay at twenty dollars per ton. It is very rich in nitrogenous substances, and is consequently an unsafe food for cows, if fed to excess. The cotton plant possesses some very powerful medicinal qualities. The root produces abortion, and the seed certainly has some of the same active effect. The meal has a decided inflammatory effect upon the milk glands, and, therefore, is to be used only in very moderate quantities. We have fed it to cows from four pounds daily down to one pound, and while feeding two pounds daily, with twice as much bran and corn meal, the butter product of a cow experimented upon ran up to two pounds daily. When four pounds daily was fed, with the same quantity of corn meal and bran, the yield of butter was only 1.83 pounds per day for a few days, when an attack of garget was brought on, and for fourteen days afterward the yield was less than a pound. As this result happened frequently with other cows in the dairy, and hired men could scarcely be restrained from using too much of it, and a fine litter of Berkshire pigs were sacrificed to this temptation to feed the meal to excess, its use was discarded. With one pound only, used with twice the quantity of corn meal and bran for a single ration, cotton seed meal may be used safely; but as any excess over that is apt to be injurious, it is advisable to mix the feed in bulk, so that the ration cannot be exceeded by any accident. This meal gives a high color, great solidity, a fine waxy texture and a rich, nutty flavor to the butter; the latter fact seems to corroborate the belief that the oils of the food really go into the milk unchanged through the digestive organs, in which they are emulsified, and thence are discharged into the milk.

As the digestibility of a food is really the measure of its value, it is a most important part of the dairyman's business to make careful tests in his dairy of the effects of foods in regard to the quantity and quality of the product. Animals differ very much in respect of their digestive ability. Some cows will make a very fair profit from the same food upon which another cow will make a serious loss, and these results, vital to the interests of the owner, can only be ascertained by most careful and repeated tests.

A Bit to Prevent a Horse from Carrying His Tongue Out.

Our illustration, made from a sketch sent us by Mr. N. S. Hitchcock, Ionia county, Michigan, rep-



BIT FOR HORSES CARRYING THEIR TONGUE OUT.

resents a bit which appears to answer its purpose completely, and which is thus described by Mr. Hitchcock: "I had a leather bit made, which is preferable to metal, then I fastened a pair of small screw eyes into the back part of it, two to two and a half inches apart, that is about one inch and one-quarter each way from the center of the bit. Then I bent a pin of stiff wire, as shown in the illustration, turning the ends into the screw eyes so as to form hinges. This will lie lightly on the horse's tongue and yet prevent the animal from putting its tongue over it or out of the mouth."

A Simple Wagon-Jack.

We illustrate herewith a simple and practical wagon-Jack, which is almost wholly of wood, and can be made by any ingenious farmer. The upright part is of plank or board, three feet long, to which a diagonal brace is firmly nailed, and sawed off so as to leave the lower end level with that of the upright. The horizontal lever is four feet long, notched on the upper edge near the large end, to receive the axle of a wagon. This is loosely pivoted to the upright by a common carriage bolt. The pawl or "dog," is also held in place at the upper end by a bolt, while the lower end rests in the notches of the lever. It is powerful enough to lift the axle of any farm wagon.

A Secure Lantern Holder.

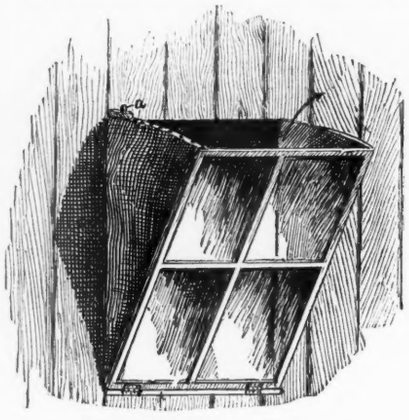
A sketch of the device for fastening a lantern in a stable, from which our illustration has been drawn, was sent us by Mr. E. Hild, Cook Co., Ill.

A SECURE LANTERN FASTENER.

The apparatus consists of a wire stretched across the top of the stable, a few feet back of the stalls. Before fastening the wire an iron ring or a chain link large enough that it may be moved easily, is slipped on it. A piece of strong clothesline of convenient length is securely tied to the ring, and to the lower end of the line a common harness snap-hook is fastened. When the lantern is hung on the hook it is perfectly secure, and may be easily moved from stall to stall, or to one side of the stable when not in use.

Stable Ventilation.

The accompanying engraving represents a combined window and ventilator for a stable. The sides are of pine lumber, twenty-six inches long, and one foot wide at the broad end, tapering to one inch wide at the other end. The wider ends are cut to a segment, as shown in the engraving. Quarter-inch holes are bored in the edge of one of these boards. A sash eighteen by twenty-six inches, with four lights of glass, is screwed to the front edges of the boards. The whole is then hung in place by a pair of wrought iron butts, screwed to the lower side of the sash and to a board firmly nailed to the inside of the stable, in the rear of a stall. A flat piece of iron, with a quarter-inch hole, or a stout screw eye is fastened into the stable wall directly over one of the side-boards. Through this an iron pin, *a*, is thrust into a hole in the edge of the side board, to hold the ventilator at any desired angle. When open, as shown in the engraving, a current of air is admitted, in the direction indicated by the



A SERVICEABLE VENTILATOR.

curved arrow, ventilating the stable without exposing the horse to a direct draught.

Begin Fattening Early.

There are advantages and disadvantages in beginning the fattening of swine or other animals early in the fall. If the process is not begun until late, it must be carried into the extreme cold weather, when a considerable percentage of the food is required to produce bodily heat. By fattening the animals earlier, the percentage of food required for bodily heat is reduced. During severe weather the appetite of the animal is less vigorous and its digestion less nearly complete, due to the effect of the rigor of the weather upon its body in general. As the profit is increased by rapid fattening and good digestion, we increase the profit by fattening while the weather is mild. Also, the work of attending to the animals can be more economically done in mild than in severe weather. But, on the other hand, we incur greater risk of disease, especially among swine, by fattening in warm weather. This, however, is not great when the animals are given a variety of wholesome food, pure drink, and clean quarters, and these produce the cheapest flesh as well. In the early part of the season the animals will get some food from the pastures; but as this food is dry and often scant, the animals will frequently expend as much energy in roaming about the pastures, as could be produced from the good they get, making the only advantage the greater variety in their food. Nevertheless, there is a net gain in fattening early; and animals put upon the market earlier than is the bulk of the product, usually command a better price than those prevailing later, when the market is well-nigh glutted.

A Country Cottage Costing $3.000.

D. W. KING, ARCHITECT.

The accompanying engravings represent the perspective view and plans of an attractive country cottage in the modern style, suitable for farm or village. The plans can be adopted to a narrow lot if desired, but the effect will be more picturesque if the plot of ground is not less than fifty feet in width, as seen in the perspective view, figure 1. There is a cellar under the entire building, six feet eight inches in depth, floored with a bed of concrete three inches deep. The cellar is provided with an outside door and stone steps, covered with batten doors, and a plank stairway to the floor above. It also contains a hot air furnace for heating the house. The cellar walls are built of good quality field stone, broken to suitable shape, and hammer dressed so as to secure a good bed, all laid in mortar composed of best freshly burnt lime and clean damp sand, in the proportions of one cask of lime to two casks of sand. Add one part of best Rosendale cement to the above when tempering for use. Plaster the walls thoroughly on the outside with Portland cement to the level of the grade. The chimneys are of hard brick laid in cement mortar, the tops of same paneled and stained red with a mixture of Venetian red and linseed oil. The opening for the kitchen range is of pressed brick with rubbed blue stone lintel, and has a rubbed slate hearth. All other fireplace openings faced with pressed brick, heaters of rubbed slate. The first story is ten feet, and the second story nine

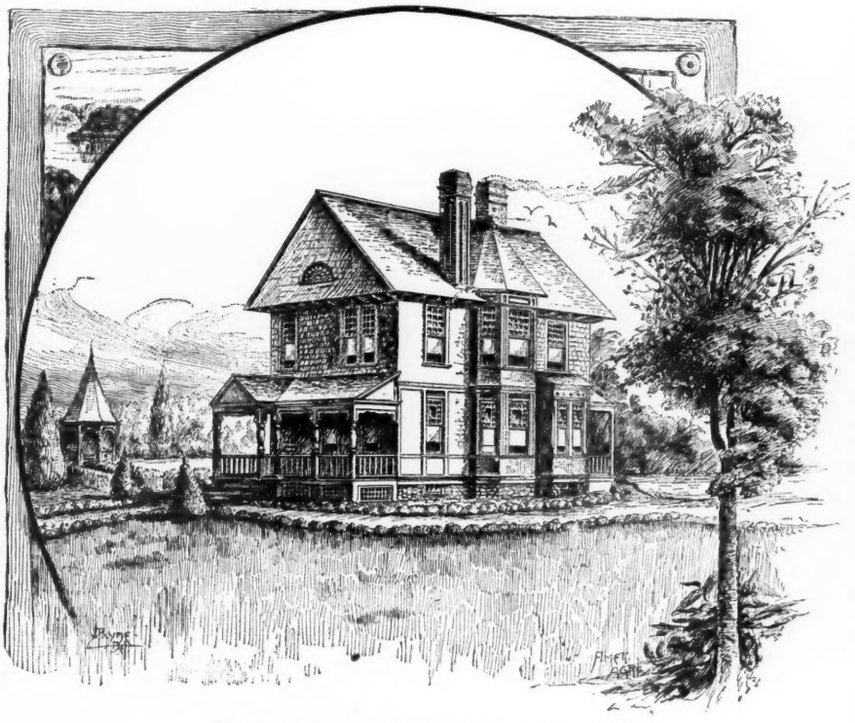


Fig. 1.—PERSPECTIVE VIEW OF COUNTRY COTTAGE.

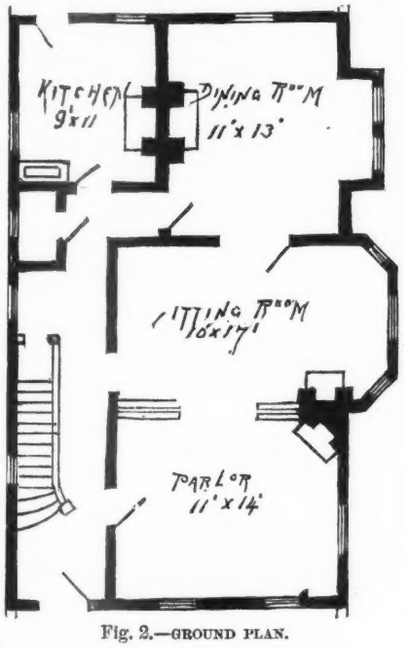


Fig. 2.—GROUND PLAN.

feet six inches in hight, all in the clear. The side walls and ceilings of the rooms and closets are hard finished on two coats of brown mortar and well seasoned pine laths.

The floor beams to have one row of double cross bridging in the middle of each span. The window frames to have 7/8 inch jambs, and 2 inch subsills, 7/8 inch sills, 1 1/8 inch blind hanging stiles, all other outside finish, such as corner boards, gutters, outside steps, cornices, belt coursers, water tables, outside door casings, ridge rolls, veranda posts and railings, outside cellar doors, casings, etc., to be of white pine of usual dimensions. Window sash 1 1/2 inch thick glazed with double thick American glass, to balance with cast iron weights and brown hempen cord. The veranda floor of 1 1/8 by 4 inch white pine, the attic floor of 7/8 by 4 inch spruce. All other floors of 7/8 by 3 1/2 inch yellow pine, driven up close, and blind nails to each beam. The first story base to be 7/8 by 10 inches, and the second story 9 inches, including mouldings. The stairs to have 7/8 inch risers and 1 1/2 inch treads, of yellow pine. Hand rail of stairs 3 1/2 by 4 inches, main newel, 6 1/2 by 6 1/2 inches, all of dry ash. Mantels of ash, with grates for burning coal. All other inside finish of yellow pine. Architraves in first story to be 7/8 by 5 inches, second story, 7/8 by 4 1/2 inches, all with plinth blocks, and turned corner blocks.

The frame of the building is of sound seasoned spruce of the following sizes:

Sills, 4 by 6 inches. Plates, 4 by 4 inches.

Studding	3 by 6 inch,	16	inches	from	centers.	
First floor beams	2 " 10 "	16	"	"	"	
Second floor beams	2 " 10 "	16	"	"	"	
Attic floor beams	2 " 9 "	16	"	"	"	
Rafters	3 " 6 "	16	"	"	"	
Veranda sills	4 " 8 "					
Veranda floor beams	2 " 8 "	16	"	"	"	
" posts	6 " 6 "					
" plates	4 " 6 "	cased				
Bridging	2 " 2 "					

The outside and sliding doors to be two inches thick. Sliding doors with six raised panels, moulded, 5 feet 8 inches by 8 feet; front door, 2 inches, by 3 feet by 8 feet, with six raised panels, moulded. Main room doors of first story 1 1/4 inches, by 2 feet 10 inches by 7 feet 6 inches, with six raised panels, moulded. Closet doors 2 feet 4 inches wide by 7 feet 6 inches high, paneled and moulded same as main doors. Second story main room doors 1 1/4 inches by 2 feet 8 inches by 7 feet. Closet doors 1 1/4 inches by 2 feet 4 inches by 7 feet, sunk panels, moulded both sides. The front door to have three bronze butts, bronze knobs, striking plates, roses, drops and escutcheons. The parlor and dining-room doors' furniture to be of bronze, with bronze-faced mortise locks. All other door furniture to be of japanned iron, with white porcelain knobs, and brass-faced mortise locks. Each wardrobe closet to have one dozen black japanned wardrobe hooks placed where directed. Pantry fitted with shelves; sink and laundry tubs for kitchen. Fourteen ounce planched copper bath tub, with a complete water-closet, with cherry top and cover hinged to lift. Same to be furnished with suitable tank, and supplied with water from tank in attic, or from the village waterworks. Sink and tubs supplied with water through five-eighth inch galvanized iron or AA lead pipe. Line all valleys and gutters with I. C. charcoal tin; three-inch leaders of M. F. tin, connected with street, sewer, or cesspool by four-inch vitrified earthen pipe. All outside metal and woodwork painted two good coats of colors to suit owner. The inside woodwork to have two coats of Crockett's preservative rubbed smooth. Mantels, stair-rounds and rails, watercloset seat, and bath-tub top, to have three coats. All left complete. The cost of this cottage will vary from three thousand to three thousand five hundred dollars, according to the current rates of labor and the cost of cartage and material in the respective locality. Figure 2 shows the ground plan without the veranda and porch, and figure 3 the plan of the second floor.

RE-TOP THE STACKS.—A slight defect in the top of the stack of hay or straw will occasion a serious loss. In the hurry of building the stacks, either in hay harvest or threshing time, imperfect tops may be made, or a good top may be disarranged before

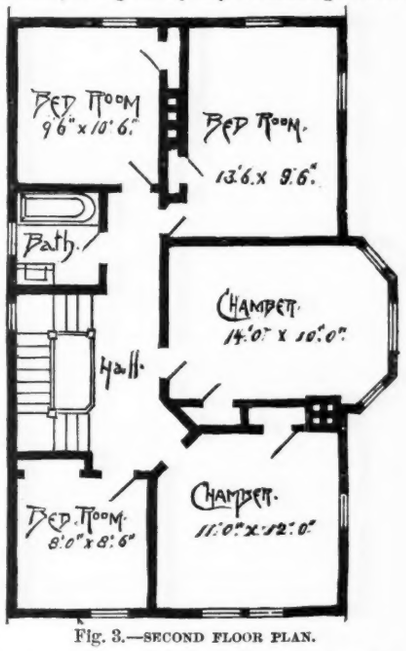


Fig. 3.—SECOND FLOOR PLAN.

it has time to settle down, or be made defective by the settling of the stack. Now, when there is more leisure, it is well to examine the stacks and re-top any that may need it. For repairing the tops of stacks, the finer the grass the better top it makes.

Pine-Apple Culture in Florida.

DR. S. E. NEWTON, FLA.

Pine-apple culture is yet in its infancy in Florida, but the success already met with in some parts of the State promises that it may become one of the established industries.

Pine lands give the best results in growth of plants and fruit. In preparing such land the trees should be burned out, and the ground thoroughly cleared of all roots and undergrowth. It should then be plowed, and a moderate application of cotton seed meal, well rotted stable manure, muck or bone meal be harrowed in. After rain has settled the ground, parallel furrows should be run with the plow three feet apart, and any or all of the above fertilizers applied in the furrow, and covered again with the plow. As soon as possible after another rain, the plants should be set from one to two feet apart in the rows.

The young plants are called suckers, slips, crowns, crownlets and eyes, according to the part of the parent plant they are taken from. Suckers sprout from the root of the old plant after fruiting, slips grow at the base of the fruit itself, the crown is the crest of leaves at the top of the fruit, crownlets grow at the base of the crown, and the eyes are found on the fruit stalk. All these are used for planting, and opinions vary greatly as to which will fruit the soonest, but probably the size of the plant, and the treatment before and after planting will influence the fruiting more than anything else.

If the ground has been thoroughly prepared, and moderately fertilized before the plants are set, all that remains to be done is to mulch them heavily after the ground has been well watered by rain or artificially, and if subsequent manurings are found necessary, cotton seed meal is probably the best. The plants may be set out at any time, but they root better if planted during the rainy season of summer, usually from June to October. The ground should be high and dry, and the plants should never be set on moist land, or where water is liable to stand after a rain. Each plant fruits but once and then dies down, suckers rising up from the roots to take their place. When these are of sufficient size, the whole root should be dug up and cut apart, so as to leave one sucker to each piece; they are then ready for planting out. If sand collects in the center of the plants it should be washed out by letting a stream of water fall on them from a vessel held three or four feet above, but if the ground is kept well mulched as it should be, there is little danger from this source.

Plants fruit in from one to three years after setting out, usually in about two years. The pine-apple plant is very sensitive to frost, and should always be protected in those parts of the State where frost is liable to occur. This can be done by putting up a light frame over them, and covering with boards, bagging, trash or anything that is most convenient, the whole to be removed when danger of frost is over. Another method of protection, and a very good one, is to cover the plant entirely with pine straw or other trash thrown on the plants until danger is past. Some growers keep smudge fires burning on frosty nights to the north and west of the plants, and as the chilling winds of winter usually come from those directions a thick, warm smoke is blown over the plants and frost warded off. As the fruit grows on a long stem, it will usually fall to one side, and lying on the ground is liable to rot. It should therefore be secured to a stake, or a light frame may be placed along the rows at a proper hight to keep the fruit upright. In shipping to distant markets the pines are cut from the stem when slightly colored, and while still hard, and allowed to ripen in transit, or after reaching their destination. The following varieties have given the best satisfaction in Florida:

SPANISH.—A very desirable variety, and probably the best for general cultivation; it will stand more cold than any other, is a good shipper, and will flourish on poorer soil; the quality of the fruit is not quite as good as that of some of the other sorts, but owing to the ease of its cultivation, and its capacity to resist neglect, it has come to be the favorite; the plants commence to bear quite early, and when properly cultivated, the fruit is large.

SUGAR LOAF.—The fruit is smaller, but superior in quality to the Spanish, and where the planter is prepared to give it extra care in cultivation, and protection from frost, if need be, his labor will be well repaid.

CAYENNE.—This variety is noted for its large fruit, and absence of stickers on the leaves; the quality of the fruit is good, and it deserves to be more generally cultivated.

EGYPTIAN QUEEN, OR TRINIDAD.—Probably the finest variety grown in Florida; the fruit is of large size, superior quality, rich, melting, and with an almost entire absence of the toughness noticeable in some varieties. Where frosts are not likely to occur, or where it is given extra care and protection farther north in the State, there is no variety of this delicious fruit that will give greater satisfaction, especially for home markets, or where transportation facilities are good.

Notes from the Pines.

During the long and torrid spell we had in July and the early days of August, the weather, as a subject of conversation, was "tabooed," and I refer to it now with reference to its effects upon plants, rather than upon suffering humanity. In a large collection of plants, including specimens from every country, a long continued spell of any kind of weather, whether it be unseasonably cold, continued wet, or intensely hot, will be sure to be suited to some kinds of plants. In the late heated term it was the turn of the sub-tropical plants, which had weather to remind them of their native home, and how they did enjoy it; they appeared to fairly revel in it. The effect was especially noticeable on the Southern species of *Hibiscus*.

THE HIBISCUS OR ROSE MALLOW,

is a large genus of about one hundred and fifty species, and includes both herbs and shrubs, natives of the tropical and sub-tropical of all parts of the world, several being natives of the United States. The northern-most species (*Hibiscus Moscheutos*), the Swamp Rose Mallow, is very common in the marshes along the coast. Those who travel on any of the railroads that cross the extensive marshes which extend from Newark, N. J., northward, see this plant in its perfection. The rose-colored flowers much resemble the single ones of the Holyhock, though much larger. This species is an excellent garden plant, and is often cultivated under the incorrect name of *H. palustris*. A pure white variety is not rare. There are in the garden several of the Southern species, which far excel the Northern one just mentioned in the brilliancy of their flowers, their taller stems and handsomer foliage. These species have flourished in the hot weather as never before; not only have they been earlier, and grown with greater vigor than usual, but their colors have been more brilliant and intense than in cooler summers, when they bloom very late.

THE SCARLET ROSE MALLOW (*Hibiscus coccineus*).

This, one of the most stately perennial plants in the garden, is found in Georgia, Florida, and other Southern States. It is six or seven feet high; its ample leaves are five-parted to the base; the flowers, from six inches to nearly a foot across, are of the brightest scarlet.

THE HALBERT-LEAVED ROSE MALLOW (*H. militaris*).

This reaches as far north as Pennsylvania and Southern Illinois, and from there southward. This, though not so showy as the preceding, is one of my favorites, on account of its neat habit. Its stems are about four feet high, its leaves handsomely three-lobed; the flowers, about five inches across, are of a pink color with a darker center. There are other Southern species, apparently worth growing, but the above are the only ones I have tried.

THE CALIFORNIAN ROSE MALLOW (*H. Californicus*).

This is much like the Northern species, *Hibiscus Moscheutos*, and was described as a variety of that, var. *occidentalis*, but botanists now regard it as distinct. Its stems are five to seven feet high, and like the heart-shaped leaves, are velvety downy. The flowers, six inches or more across, are pure white, with a clear purple spot in the center. A very pleasing species. I have briefly described the most important of the herbaceous species of Rose Mallow, or *Hibiscus*, because they have given me much pleasure, and I wish that these were better known. They are multiplied by division of the roots and by seeds. They have been a little experimented with in the way of crossing and hybridizing, and the success thus far is such as to warrant amateurs to work in this direction.

THE ROSE OF SHARON (*Hibiscus Syriacus*).

This, a shrubby species of *Hibiscus*, is one of the oldest garden shrubs, having been introduced in 1566. I have spoken of a variegated form, as one of the best of the shrubs with variegated leaves. Very few such shrubs retain their markings through the summer, but this at the end of the heated term was brighter and more distinct than ever.

SPINACH AND OTHER GREENS.

I would like to have spinach or its equivalent at every dinner during the season. This is usually not difficult to accomplish, but the heat of the past summer burned up the succession crops of spinach which is a cool weather plant, and the beets, of which an abundance were sown, to allow of the use of their thinnings, soon gave out and my prospects for daily greens were very dubious. "What are you doing to-day?" I asked the gardener. "Hoeing up Pussley" was his reply. "Bring up a basketful of the most vigorous and quickly grown Pussley," I requested; he did this, and my trouble as to an adequate supply of greens was at an end. I recollect that when, many years ago, I had charge of a party on an exploring expedition through what is now Arizona, we occasionally came across large tracts covered with *Portulaca retusa*, a species closely related to the well known weed, *P. oleracea*. When such patches were met with, the train was halted, and all hands set to work gathering this wild "Pussley," filling up the camp buckets and every other available receptacle. To men who had not eaten a vegetable of any kind for months, this proved a most welcome addition to their salt pork. The seeds of the common Purslane are offered in all French seed catalogues, and Messrs. Villmorin, Andrieux & Co., in their beautiful and elaborate work, *Plantes Potagères* (Garden Vegetables), give under *Pourpier*, not only the common Purslane as *Pourpier vert*, but two varieties; *Pourpier doré*, the Golden or Yellow Purslane, and a large-leaved form of the same. It is not likely that American gardeners, whose chief interest in Purslane is to get rid of it, will ever need to grow it as a crop. If they will try the succulent leaves and stems, thoroughly cooked and dressed like spinach, they will have a much better opinion of this much despised weed.

THE LAWN IN HOT WEATHER.

Intensely hot weather affects the lawn unfavorably, not only by stopping the growth of the lawn grass, but it encourages the Crab grass (*Panicum sanguinale*), one of the most troublesome of weeds that infest the lawn. Its prostrate stems take root at each joint, and form a mat which smothers all other grass, and the hotter the weather, the better it likes it. Fortunately it is an annual, and by keeping it from producing seeds by frequent mowing, it may be kept in subjection. PINES.

CORN MEAL FOR COWS.—The greater part of the fat is in the hull and germ, and is retained in the waste product of the hominy mills, which separate the starchy kernel from these parts of the grain. Consequently the refuse of this manufacture, known as hominy chop, would be worth more for feeding to cows, than the corn itself, if the hulls were all digestible. But in a long course of feeding corn meal, we have found the fine, bolted, yellow meal to give better results than any other form in which corn has been used for dairy cattle.

The Grapevine in Autumn.

Probably no other question comes to us, at this season of the year, more frequently than "What shall I do with my grapevines?" If we knew how the vine has been treated through the summer, and what was its present condition, the answer would be a comparatively easy one; but the probabilities are, that the vine has not been treated at all, but allowed to have its own way, and at the fall of the leaf will present one of the worst problems — a neglected vine, and what to do with it. Each vine in this condition will present a different appearance from any other, and each requires a treatment peculiar to itself. As one stands before the vine, after the leaves have fallen, he sees a confused mass of old stems, and stems or canes which grew the last season. A knowledge of a few points in the manner of growth of the vine, will be a great help to the proper treatment. In the first place, observe that none of the stems now seen will bear fruit or leaves next year. All future growth will come from buds, now to be seen on the canes which grew the past summer, or last season's canes. By diminishing the number of these buds, we can control the growth of next season. Next spring nearly every bud will start, and produce a shoot, which will bear leaves and fruit. Each of these shoots, if left to itself, will bear three, and sometimes more bunches of fruit, at its lower part, and above these it will elongate and produce several leaves, and finally ripen into just such a cane as we are now considering. It will be seen, if every one of these canes of last season were allowed to produce a shoot from every one of its dozen, or twenty, or more buds, the result would be, at the end of next summer, a still worse tangle than at present. Where two canes are produced at any point or joint of the old stem, cut out the weakest; next cut out all stems that stand nearer to the one next below it than one foot; next, shorten every cane of last season's growth, leaving but three buds, counting from the old stem. This will remove a large share of the old vine, but one is likely to remove too little rather than too much. One in pruning a neglected vine needs to exercise some imagination. In the first place he must see that the framework of the old stems and canes of the past season will remain as they are; that all future growth will take place from the buds now seen at each joint of the canes; let him imagine how the vine will appear next season, when each bud will be a shoot, bearing leaves and fruit. If this is imagined, or foreseen, it will help in deciding how to train the vine. The manner of doing this will depend upon what kind of a trellis or support is provided. Of course, the old stems are heavy and must be fastened firmly to the support. Then imagining that each bud left to grow will produce a shoot that will ripen into a cane, provide something, wire or lath, to which it may be tied.

SPECIMEN NIAGARA GRAPEVINE.

We are often asked whether vines should be pruned in the autumn or spring. As a rule, autumn is the best season; as soon as the leaves fall, or when they part from the vine at a touch. At this season there is more time for the work, and it is pleasanter to work it this season. If the prunings, as is often the case, are to be used to make cuttings to propagate the vine, such cuttings will root more satisfactorily now, than if the wood is exposed to the cold all winter.

Training the Grapevine.

As an example of successful grape training, we give the above engraving of a specimen vine of the Niagara. Those who are familiar with the horizontal arm method will see that this vine was started on that system, but not kept strictly to it. The late Mr. Knox, when asked how he pruned his astonishingly productive vines, always replied: "So as to get the largest crop of the best fruit." One who understands the manner of growth of the vine, and can properly judge of the requirements of each individual vine, will often find that he can deviate from the regular system that has been adopted, with advantage to the crop. In no branch of horticulture is good judgment and competent knowledge more needed than in vine growing.

Cup for Exhibition Flowers.

Mr. Benj. Field, an English horticulturist, has devised a cup, which he finds very convenient in exhibiting cut flowers, especially those with long stems, such as Chrysanthemums, etc. Figure 1 shows a tin tube with a funnel-like top; this is to hold water. Figure 2 is a tin tube to hold the flowers, and which fits snugly in the outer cup, and evidently without a bottom, though not so stated in the description. The flowers can be arranged in this, and held in the desired position by packing moss or paper around the stems. When all is properly arranged, this inner tube is set within the other. A board or shelf with holes of the proper size may be used to keep the cups in proper position. Evidently a useful little contrivance, which may be made of any size desired.

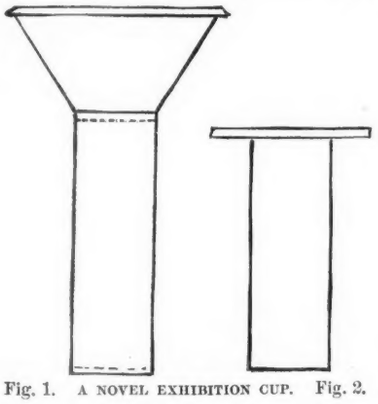


Fig. 1. A NOVEL EXHIBITION CUP. Fig. 2.

Forest Tree Seeds.

Many of those who attempt to raise forest trees from the seed meet with disappointment, from not preserving the seeds properly, or from not knowing that some trees ripen their seeds in spring or early summer, and that these must be sown as soon as ripe. The same genus sometimes has species that have this peculiarity, while others ripen in the fall in the usual manner. Thus, while the seeds of the Swamp or Red Maple, and those of the Silver Maple, ripen in the spring or early summer, the Sugar and other maples ripen their seeds in the autumn, and must be kept until the following spring. Much of the success in raising forest trees from seeds depends upon having the seeds properly preserved during the winter. They must not be allowed to get too dry, nor must the moisture and temperature be such that germination will be commenced before they are sown, nor should they be exposed to such a low temperature that the vitality of the embryo will be impaired. When in doubt how to best preserve a tree seed, mix it with about twice its bulk of damp sand—not wet sand, but good sharp sand, just as it is dug out of a bank. The seed thus mixed with sand, should be placed where it will be at an even temperature of a few degrees above freezing, and where mice or other vermin may not get at it. Nuts of the hard-shelled kind, especially, should not be allowed to get dry; the hickories, walnut, and butternuts, should be placed in heaps of a few bushels, and carefully covered with sods from an old pasture, and the turf covered with several inches of earth. If turf is not readily procured, cover the heap with straw, and place on this several inches of soil. These heaps must be in a dry place, where water will not accumulate, and in one where vermin will not disturb them. Chestnuts, which are very apt to get too dry, may be preserved in sand, as mentioned above.

A New Strawberry—The Gold.

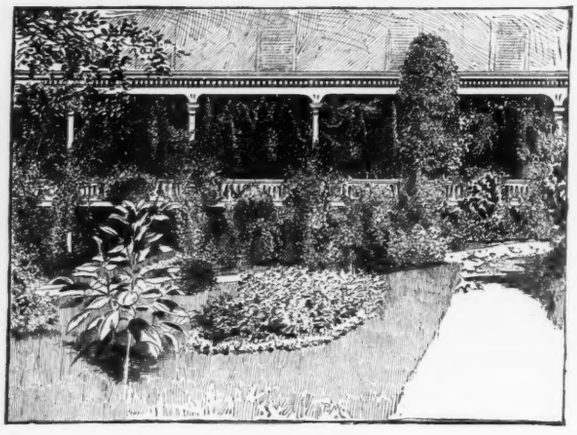
Among the new varieties of strawberries introduced this season, the Gold, illustrated in our engraving, appears to be one of the most promising. It originated in 1880, with Messrs. P. M. Augur & Sons, of Connecticut, from seed of the same berry from which the Jewel was raised, and was named

THE GOLD STRAWBERRY.

in honor of T. S. Gold, the Secretary of the Connecticut State Board of Agriculture. The berry is large, nearly globular, of bright scarlet color, firm texture, and very good quality. It ripens from medium to late. Its blossoms are pistillate, and foliage and plants vigorous and healthy. While on our grounds it has not been so prolific as the Jewel, in quality it was decidedly superior.

Balcony and Veranda Gardening.

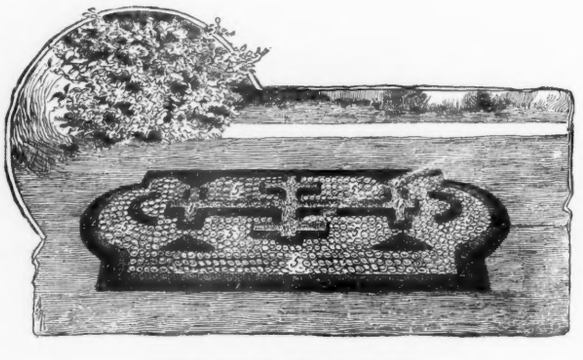
Balcony and veranda gardening differ from window gardening proper, in being carried on in the open air, while the window garden is upon the inside of the window. One sees in our own cities, very little attention given to balcony gardening, as compared with European cities, especially London and Paris, where the houses are generally built with stout balconies projecting from the windows, as if to encourage gardening in them, and one cannot go far, whether in the streets of costly residences, or in those of the humbler and poorer people, without meeting with fine examples of balcony gardening, which indicate a love for plants and flowers on the part of those who dwell within. The flower markets of both London and Paris offer a large variety of plants, suited to the balcony, in small pots; indeed the market gardeners near London cultivate large numbers of such plants and have extensive ranges of glass for producing them. One can go to Covent Garden or other market, and find at once everything he wishes to stock his balconies, together with soil, peat and whatever else may be needed. Plants with bold and graceful foliage, should form the main feature of a balcony garden, with an abundance of trailing plants to fall over the balcony railing like a curtain. For this purpose the "Moneywort," also called "Creeping Jenny" (*Lysimachia nummularia*), is one of the most popular, and Blue Lobelia is combined with it with fine effect. Ivy and many other climbers may be used for this purpose, and also to be trained up the side of and over the windows. While the chief furnishing of the balcony garden should be with plants of fine foliage, these should be lightened up with some bright free-blooming flowers, such as scarlet geraniums, etc. Veranda gardening affords one more space, and a wider scope for the exercise of gardening skill than the balcony. The veranda, if it extends across the front of the house, and the front door is entered from it, affords room for much tasteful arrangement of plants. Vines and climbers of hardy kinds, planted in the border outside, may be trained up the pillars or upon wires, but not in such profusion as to make too much shade for the plants on the veranda. Most of the finest Fuchsias are summer blooming, and are especially suited for the veranda. These plants are best seen from beneath, and if they can be set where one ascending the steps can look up at them, the effect will be most pleasing. Another set of the most brilliant summer-blooming plants are the Cactuses, especially of the genus *Cereus*, such as the old *C. speciosissimus* and its varieties, which produce, with little trouble, the largest flowers of a dazzling brilliancy. The more ample room of the veranda allows of the use of much larger plants than can be accommodated on the balcony, and Palms, Dracenas, and other large specimens may be grown there. The Oleanders (*Nerium*), though old-fashioned, are fine summer-blooming shrubs, stately, with fine foliage, and with flowers varying from white to deep rose color. They are excellent plants for the veranda. Shrubs that are not quite hardy, such as the European Holly, especially the variegated kinds, are fine decorative plants, as are small Conifers, such as the Retinisporas, etc. To show what may be done where one has ample veranda space, and the desire to make the most of it, we give an example of an extensive garden of this kind in the engraving. One in undertaking balcony or veranda gardening to any extent in a northern climate, before he procures plants that must be sheltered during the winter, should consider the question of protection. If there is a good cellar, not made too warm by a furnace, most plants can be stored there. Some of the palms, especially the species of *Chamærops* from our Southern States, the south of Europe and Japan, are nearly hardy, and have been kept with only the protection afforded by setting them in a barn. Some plants may be wintered in a spacious hallway, and most kinds in a deep cold-frame, which can be readily constructed at little expense.



A VERANDA GARDEN.

A "Flower Bed" Without Flowers.

Those who have not seen it done, can hardly imagine what a beautiful effect may be produced by making an ornamented bed with various shades of green only, without the use of flowers. The engraving shows a bed of this kind, made in a lawn; the outer line, as well as the outlines of the figures within the bed, are planted with English Ivy, which grows admirably when pegged down, so that its stems may be in contact with the soil, where they will take root their whole length. Thus treated, the Ivy will bear the clipping needed to keep its lines distinct, and is easily managed. Just within the Ivy, both on the outer edging and in the figures within the bed, is a row of a lighter green. We have seen *Centaurea gymnocarpa*, one of the plants known as "Dusty Miller," used for this purpose with fine effect. The Ivy is of the darkest green, and the *Centaurea* is of a greenish gray color, hardly green at all. Each hightens the color of the other, and the effect is most striking. The groundwork of the bed, all the space not covered by the figures, is filled in with some *Echeveria* (properly *Cotyledon*). These plants are closely related to the Houseleek (*Sempervivum*), and, like that, produce their short and fleshy leaves, in regular rosettes. One of the best of these is *E. calcarata* (incorrectly *E. Californica* of some catalogues). This is a very robust species, but is not so striking in color as *E. secunda glauca*, which is very light gray. Beds like this are more readily kept in order than those in which flowering plants are used for working out the design, and from their novelty quite as pleasing.



RIBBON BED OF FOLIAGE PLANTS.

THE CONTENTS OF A CISTERN.—To ascertain the contents of a cistern, the diameter is multiplied by itself, or squared, and this product is multiplied by .7854. It will be near enough to take three-quarters of the product in feet, and multiply this by the depth in feet. This gives the number of cubic feet of water in the cistern.

The Navel Orange in Florida.

The orange growers of Florida are not slow to avail themselves of the knowledge that other countries have given the world. France, Spain, Portugal, Italy, Malta, Java, Ceylon, Egypt, China, Cochin China, Brazil, and the Sandwich Islands, all have been laid under tribute. Then there are many hybrids cropping out here and there, by fertilization of one variety with another. We may confidently look for some very superior varieties to be brought out at an early day. Some are now bearing.

Among the most promising of the newer varieties is the "Navel" or Bahia. I do not think it will prove to be a shy bearer. It blooms most profusely very early, exhausts itself with bloom when small, and per force holds only a few fruits. As the trees get age, they hold more and more, and, I doubt not, in time will be found very fruitful. My oldest trees now bear moderate to full crops. I do not say they are the best oranges we have. The Jaffas, Majorcas, Maltese Bloods and Malta Ovals are superior, as I look at all sides, counting the returns in bank from actual sales for a period of years, and, as this is comparatively a new industry here, that is where not a few of us must look. The Bahia has this advantage, its unmistakable "trade mark." There is no mistaking it. It is prominent. It carries its "outward and visible sign," and no one, who has once eaten a Bahia, doubts, when he sees the mark, what he will find to be the "inward" condition, although he may not admire the umbilical mark, when the orange graces the sideboard or the table.

As to insects, every one who has lived in a tropical or semi-tropical climate, has found them. They swarm, they flourish on the slightest favors extended. The grower of fruits must be a warrior and fight to keep under the common enemy, for all washes are only palliative. They do not go to the root of the matter; they are not constitutional, as the physicians would say; they promise much, but will be found unsatisfactory in the end; they are too much like the sundry humbugs, which the *American Agriculturist* so sedulously and fearlessly exposes. They destroy the beetle which lives on the scale, and that numerous family of spiders, not unlike those which infest the rose bush. These beetles are my most efficacious friends. So long as they are here, I fear not. I have spent no time or money on washes for the last seven years. A vigorous, healthy tree, fed with that which makes well-rounded wood, never suffers badly from insects. It is the watery tree which stands near your chicken yard, or your stable, when the bark is thin and watery, growth soft and succulent—there is the home of the scale, where he easily punctures the bark or soft leaves, lives and multiplies, where there are not all the elements that a healthful orange tree demands in way of plant food. A thoroughly healthy tree is not the home of insects. The insects attack the weak first. "FLORIDIAN."

Pansies, New and Old.

While many regard our garden Pansy as derived from *Viola tricolor*, others consider it to be a hybrid between that species and a Tartarian Violet, *V. Altaica;* the best authorities, however, taking the former view. The original Pansy, *Viola tricolor*, is a native of Great Britain, where it is a weed of cultivation, and of Northern Europe generally, as well as of Japan and other parts of Northern Asia. One form is found from Western New York westward and southwestward, making itself so much at

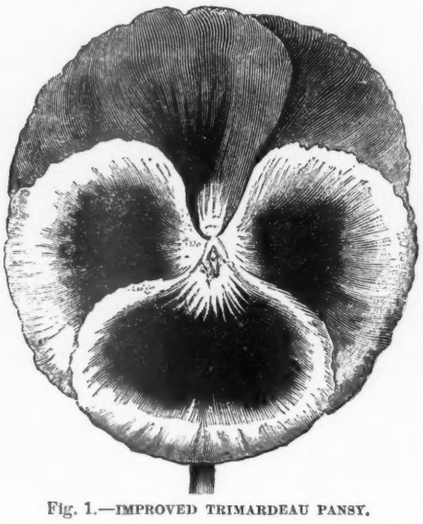


Fig. 1.—IMPROVED TRIMARDEAU PANSY.

home, that some botanists have thought it was a native of this country; but later observers regard this as an escape from cultivation, much degenerated from garden varieties. Any of the wild forms have such small and insignificant flowers that it is difficult to believe that the magnificent flowers of the present day can have been derived from them. The history of many of our popular garden flowers is obscure, but with the Pansy its importance and development from the wild state has been so recent, that it is a matter of record. The flowers in these wild plants are usually very small, varying from one-fourth of an inch to an inch in diameter. The five petals are arranged in two upper pairs, which are usually some shade of purple while the lower petal, usually the largest, is yellow. Often all the petals are all marked with purple, white, and yellow. The first attempt to improve the wild Pansy was made about the year 1810, and by a lady! In that year, Lady Mary Bennet, of Walton on Thames, with the assistance of her gardener, planted a bed of the best wild plants, saved seeds from the best of these, and by a continuous course of selecting the seeds of the best flowers each year, made the first steps in the improvement of this most popular flower. This method has since been followed by many others, and is still continued to the present year, especially by the German florists, one of whom, in his catalogue for 1887, offers over sixty named varieties, and strains, regarded as sufficiently well marked to deserve a name. Each year the number of novelties is added to, and the enthusiasm of those who make a specialty of Pansy culture, shows no signs of abatement.

One German horticulturist, F. Roemer, who devotes himself to the improvement of the Pansy, has, after years of selection, produced an improved form of the Trimardeau Aster, a strain already noted for its large size. The "Improved Trimardeau" is shown in figure 1. In figure 2 is shown another seedling, by the same raiser, called the "Select Five Spotted," with distinct and brilliant color markings. The Pansy is an excellent plant for the amateur, as it so readily varies, and any choice varieties that may be raised from seed, may be perpetuated by cuttings or division. To succeed with Pansies requires a good strain of seed to start with, and great care in culture. As the weather becomes the hotter, the flowers diminish in size and in brilliancy of colors, therefore we can only have fine flowers in spring and autumn. To have the earliest flowers, the seed should be sown in September or October, and the seedlings pricked out in a cold frame, where they may be sheltered by a covering of leaves from the severe cold of winter. In settled weather transplant to rich, moist soil, in a partially shaded place to bloom. For autumn flowers, sow the seed in the spring, and shade the young plants in frames during summer, and transplant when the weather becomes cooler, where they are to bloom in fall. Choice varieties may be raised from cuttings, made of the solid side shoots, placed in small pots of sandy soil; these may be made in spring, with the pots plunged in a cold frame, or the cuttings may be planted in the soil of the frame, and kept moderately moist. A fine Pansy is so superior to the common one, and comes so near being a perfect flower, that it is worth bestowing any amount of care and labor to secure it. Our illustrations have been reduced to about one-third of the natural size.

Catchflies—Silene.

The Catchflies belong to the Pink Family, and are, indeed, very closely related to the pink—*Dianthus*—from which they mainly differ in having a naked calyx. The calyx of the pink having several scale-like bracts at its base. In some species the calyx only is covered with sticky hairs, while in others the stems are also clothed with such hairs. This viscid secretion often entraps small insects, on which account the plants have received the common name of Catchfly, while the botanical name *Silene*, is from a Greek word referring to the same peculiarity. Some of the species are inconspicuous, weedy-looking plants, others are interesting Alpine plants, while some are showy ornaments of the garden. The genus is a large one, comprising over two hundred species, some of which are found in every part of the world, especially in mountain ranges. In so large a genus we find a wide range of habit; from Alpine species, some two inches high, to those with stems two, three, and even five feet high. Some have low, one-flowered stems, while others have their flowers in large panicles. In colors, the flowers are from white, through pink, to brilliant scarlet and dark purple. The stemless Catchfly is called "Cushion Pink" and "Moss Campion" in England, where it is a favorite rockwork plant. It is a truly Alpine plant; found on the high mountains of Europe, and on the White Mountains, and on other high mountains in this country. Its dwarf

SILENE PUSILLA.

stems and narrow leaves form dense moss-like tufts, one to two inches high, and sometimes spreading to form a carpet several feet across. Its flowers are singly on stalks, raised just above the leaves, and pink, or reddish purple. This is considered as one of the finest rock-work plants, and not difficult to grow on a well built rockery. A favorite border plant with us is the "Sea Catchfly," *Silene maritima*, a native of the sea coasts of Northern Europe; it forms dense bluish green tufts, about four inches high, which are covered all summer with white flowers, one inch broad. The double form, the kind generally cultivated, is very handsome. Some of the most charming of the border Silenes are natives of the Eastern United States; they vary in the hight from six inches to two feet, have clusters of large flowers, varying in color from pink to scarlet, and are so near alike that some botanists think that all three are forms of one species. *Silene Pennsylvanica*, the "Wild Pink," is the most Northern of these; it extends from New England to Kentucky, and southward. Its

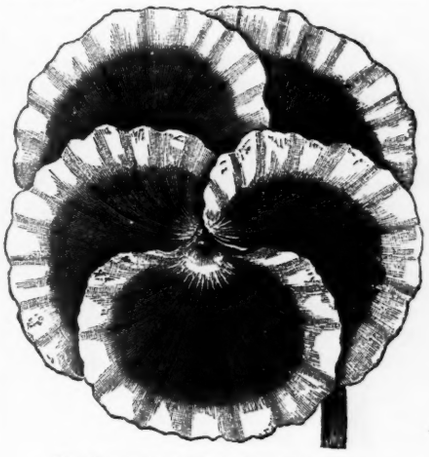


Fig. 2.—SELECT FIVE-SPOTTED PANSY.

stems are four to eight inches high, and bear a cluster of flowers of different shades of pink. The "Virginian Catchfly" or "Fire Pink" (*Silene Virginica*), grows from Western New York westward and southward; it is one to two feet high, while its flowers are in loose clusters, each flower is about two inches across, the petals are two cleft, are bright crimson, and very showy. The Royal Catchfly, *S. regia*, is found from the prairies of Ohio and Illinois southward. The stems are three to four feet high. The flowers are numerous in a narrow panicle, and deep scarlet. These three very fine Catchflies are seldom seen in gardens, perhaps for the reason that they are natives, and not as a rule, to be found "in the trade." A Catchfly from the mountains of Southern Europe is now attracting attention in England. To judge from the engraving, given as *Silene pusilla*, the small Catchfly, it is evidently a pleasing species.

FRUIT IN GREAT BRITAIN.—On account of the great severity of last winter, and the unusual drouth of the past summer, it was generally predicted that the crops of fruits of all kinds would be very poor. Carefully gathered statistics from every fruit-growing district in the three kingdoms, show that with many kinds the returns are more favorable than was thought possible, and that with apples, the fruit in which American fruit growers are most interested, the report is generally a full average crop. If this shall deter shippers from sending abroad a lot of trash, it will be of great benefit to the fruit trade, and help to restore the high reputation American apples formerly enjoyed. In that country, as well as at home, good, sound, well packed, high colored fruit of the best varieties will sell readily, however abundant the home supply may be. Unless the fruit meet these conditions, better keep it at home, as it will not this year pay the freight, and ought not to. Shippers cannot beat John Bull upon fruit twice, and those who send the dry, sweet Campfield to England, where sweet apples are nearly unknown, and label it Baldwin, cannot successfully repeat the rascally fraud. Formerly apples bearing the brands of well-known shippers, sold upon the well-established reputation of the packers. Of late years so little regard has been had to honesty in packing, that purchasers have insisted upon having the contents of the barrels turned out into a large tray for inspection. The fruit in both London and Liverpool is usually sold by auction soon after it arrives.

THE HOUSEHOLD

Ebonizing Hard or Soft Wood.

Prepare some shellac varnish, by dissolving half a pound of gum shellac in a quart of alcohol; put in a tightly corked bottle, set in a warm place, and shake frequently. When completely dissolved, add sufficient dry lamp or bone-black. It will require only about a heaping table spoonful to half-a-pint of varnish. Should it be too thick to flow easily from the brush, and spread evenly, add alcohol. Give the wood two or three coats of this, which can be done within two days. For fine work, give three coats of the black varnish, and allow it to dry thoroughly; then take some 00 or 000 sand-paper and rub the work down lightly until the surface is smooth and even, being careful not to rub through to the wood. Then apply two or three coats more, and rub down again with the sand-paper; give two coats more; allow it to dry perfectly hard. Make some rubbers of felt, an old felt hat is good, by tacking the felt on blocks of soft wood of proper shape, which should be flat, concave or convex to fit the work. Apply a few drops of sewing machine oil or any fine oil to the felt and sprinkle on a pinch of pulverized pumice stone. Rub the work with this, keeping the rubber moist with oil, and supplied with the pumice, until the wood shows a perfectly smooth surface, without any gloss. When it has all been gone over, wipe off the surface and rub clean with dry flannel cloths. The result is a fine imitation of ebony. If the shellac varnish is colored with aniline instead of lampblack, the finished surface is smoother and finer.

Another way is to use fine coach-black, ground in oil, thinned with a little linseed oil, Japan dryer and turpentine. Give the work several coats, rubbing down with fine sand-paper and finish with the oil and pumice as above. This is a fine and durable finish, the drawback being that it requires as many weeks as the shellac does days to dry so hard that it can be rubbed. As amateurs are always in a hurry to see their work finished, it is seldom used. With either of these methods, any kind of wood may be used, soft or hard. It must be scraped and sand-papered down as smooth and true as possible before applying the finish. Neither of them will raise the grain, and make the wood rough, or cause it to swell.

Fan Decorations.

An inexpensive and effective decoration for plain white walls, or picture frames, may be made of the wall-paper used for dados. The patterns with a

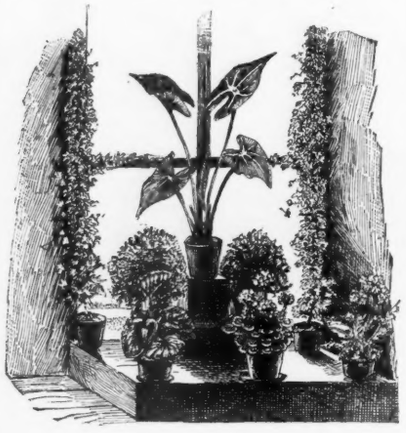
ORNAMENTAL FAN.

handsome stripe of color and gilt upon one edge are the most suitable, as the stripe makes the edge of the fan. Take about four yards of this paper, and fold it back and forth in two-inch folds, until it shapes naturally into a fan. Fasten the lower folds together, and finish the two ends of the paper by turning them over a small stick, or a strip of pasteboard, and fasten with paste. A wire should be sewed to the back, near the outer edge, to give firmness to the fan, and the whole finished with a large bow, as shown in the engraving. These ornaments may be tacked behind the upper corner of a picture, or used as a piano fan.

Arrangement of Bay Windows for Plants.

As a general thing bay windows are not arranged in such a manner as to accommodate plants very conveniently. We usually find them fitted out with circular stands or tables. On these a few plants only can be kept, and the appearance from the room is never as good as it might be, and a bay window ought always to be arranged with reference to its appearance from within rather than without.

The plan shown in the accompanying illustration



BAY WINDOW FOR PLANTS.

will be found more satisfactory. As will be seen, there are two shelves running around the window; on these plants can be arranged very neatly, using the lower growers on the low shelf, where they will hide the pots of those on the shelf above. A much better effect can be obtained in arranging plants in this way, than is possible when they are all on a level. In the center of the window a stand may be placed to hold the largest plant, where it will appear to the best advantage. Pots of Ivy may be placed in the corners, and the vines trained up the casings, and around the ceiling. The floor should be covered with oil cloth, or well painted, and the shelves and all the woodwork ought also to be given several coats of paint, that they may not be affected by the moisture which frequent syringing will leave behind. It is a good plan to have holes through the floor to allow surplus water to run off. It is best to have these shelves made like stairs, or, in other words, closed, so that there is no opening from the front. This will make it easier to keep the recess clean, as there will be no sweeping under the shelves to do. Bay windows, in which plants are kept, should always be shut off from the room by glazed doors. In this way the moisture can be regulated to a nicety, all dust arising from sweeping kept out, and the plant will be much healthier than when grown in a window without doors.

Wardrobe Closet.

The accompanying illustration shows a closet made out of a box, with hooks inserted in the back of it, also in the door, which is made of the cover of the box, fastened with common door hinges. Attached to one side of the box is an arm, which swings out into the room. Hooks are fastened into the lower side of this arm. Such a closet is very convenient for hanging up dresses, wraps, and other articles of wearing apparel, which are injured by being folded when put into trunks or upon shelves. The arm gives a chance to get at whatever hangs on the hooks at the back of the box without removing the articles on it. When the door is swung open, and the arm is swung out, it is an easy matter to get at everything in the wardrobe without removing any articles. Such an arrangement affords a place for a great many pieces of clothing in the smallest possible space, and it can be made quite ornamental by painting it, or covering it with paper, and putting a scarf over the top, and letting it hang down the side. The top makes a convenient shelf.

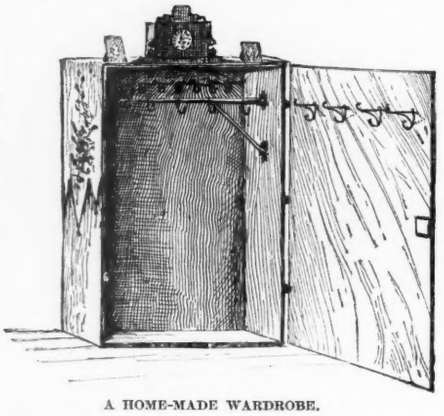
Early Fall Fashions.

Slowly the styles for cooler weather are making their appearance, and dressmakers are busy preparing the new woolen and silk suits, which will soon be in demand. Yokes will be a leading feature this autumn, not only for dresses, but for outside jackets, a fashion that is peculiarly becoming to slight, youthful figures. Tournures are decreasing in size and are quite narrow, while the extenders in skirts are tied much closer than formerly. It is reported too, that front draperies are to be much shorter. Gray is the popular color in Paris, and will be worn here until really cold weather. Two or three shades appear in one costume, and occasionally it is combined with white, braided with silver.

Hats are made to match the suits, and indeed, to be a perfect costume, including gloves, parasol, shoes and hose, should be of the same color throughout. Felt sailor hats are fashionable for young ladies. Cock's feathers, that were introduced during the summer, are a very popular fancy this fall, and are suitable for both round hats and small bonnets, and for both dressy and *negligé* occasions. The white plumes are preferred to the black or dark green, although both are worn. On a few imported hats they form the entire trimming; but more often a cluster is placed directly in front, with loops of ribbon on each side.

Where combinations of color are used, they are often most peculiar; and some of the French dresses are more novel than pretty. For instance, light blue and lavender are placed together, and blue, red, green and pink all appear in one costume. The polonaise is now known as the blouse, and promises to become very popular, especially for young ladies and misses. It is worn over an underskirt of the same material, on which it is very slightly draped. The blouse is shirred at the neck to form a yoke, and again at the waist, which is confined by a belt of colored and metallic galloon, bands of the same encircling the arm holes and wrists. The sleeves are full and gathered into the arm holes. For ladies who are to spend the autumn in the country, these blouses are comfortable and stylish, made of heavy, soft white wool, and worn over blue or brown petticoats.

Short wraps that are a combination of the mantilla and visite, with pointed tab fronts, are the most appropriate outside garments for afternoon



A HOME-MADE WARDROBE.

wear and visiting. They may be made as rich in effect as possible, of cloth, silk, or dark Genoese velvet, embroidered with gold, or trimmed with lace and passementerie. Full ruches of narrow russet or biscuit colored lace are extremely fashionable on these dainty little capes. Young girls never wear these mantles, but always cloth jackets; ladies also choosing them for morning toilets. They

may have a cape to the elbows or not, as preferred; while the cape sometimes has also a pointed hood. These jackets are rather long, are closely adjusted

Fig. 1.—FAN PLAQUE.

to the figure, and are often trimmed in a military manner, with brandebourgs, olives, and epaulettes; but whatever the decorations, the lower edge is invariably left plain. Young ladies brighten black and white gowns with a belt of gilt braid, while narrow braid to match ornaments the rolling collar, which is wired to keep it in place. Linen collars are quite wide and turned over from the top. The corners are square, and they are hem-stitched an inch from the edge. They open low in V-shape, and with them is worn a necktie of soft bias India silk, which is tied in a careless looking bow.

It is said that nets of silk and gilt cord and beads are again to be revived and worn over the back hair, but at present the Psyche knot is the most fashionable style of hair-dressing, with a few short small curls coming from it.

Sashes appear on all kinds of dresses, and the newest is known as the Empire sash, which forms a wide girdle about the waist, and is tied in front in two or three long loops, while the ends that extend below are again tied in a many looped bow, with short ends falling almost to the bottom of the skirt. With this sash the skirt is laid in flat pleats, and has no other drapery in front.

Something New.

We present, in the accompanying illustrations, a few new designs of plaques, which are of *papier maché*, consequently are not breakable, as China or porcelain. They are not costly, yet at a distance it is impossible to tell them from the finest of porcelain work. The design is drawn in the usual way, and after the painting is finished, a coat of the best quality of varnish is applied. No description

Fig. 2.—ANTIQUE PLAQUE.

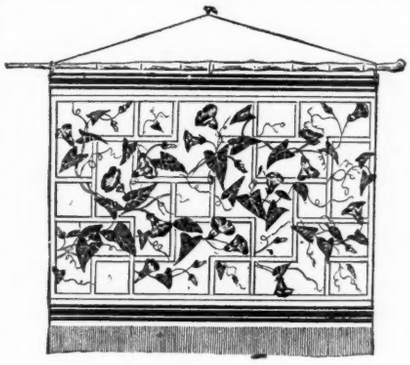
of these plaques can give an adequate idea of their beauty, but we know of nothing that furnishes a room more than these do. They can be placed on the mantel shelf, or framed for the walls, if one so wishes; but they do not require framing, as they are pretty enough without. The shell shaped is that of the shell of the scallop, and the corrugated lines, radiating from the bottom, and spreading out all around, make a pretty background for trailing vines on a screen or in a bay window.

Ornamental Matting.

Fine white matting may be worked into a great variety of inexpensive and handsome ornaments. The banner seen in our illustration may be used for a splasher, or it may be hung up wherever a screen is desirable. It is made by cutting off the selvage on the lower edge of the matting, which is then ravelled out to form a fringe. The design is painted on in oil; the lattice being done in a fine line of black; the morning-glories are painted in pink and blue, and the leaves and stems in olive; the bands are also in olive. The banner is suspended on a bamboo cane by loops of olive cords.

Care of Canaries.

It is easy to keep the canary in good health, easier, in fact, than to cure him after he becomes sick. There would be but few sick birds if they were properly taken care of. Many are neglected, and many are treated with mistaken kindness. Their food should be good, and they should have all they want to eat. The best seeds for them are German rape or millet, canary seed, and hemp, the latter in limited quantity. We would not



ORNAMENTED MATTING.

give more than a dozen hemp seeds daily. Some advise not to use it at all, but we think it beneficial to a bird when used in small quantities.

Cleanliness is all important. Be sure of this. The cage should be cleaned daily, and fresh seed given each time, with clean sand or gravel. Fresh water should be given for drinking in cups which are arranged in such a manner that the bird cannot foul them. That for bathing should be in a shallow dish like a saucer, and as soon as the bird has bathed this dish should be removed. A great many persons place such a vessel of water in the cage and oblige the bird to use it to bathe in and drink from. This should never be done. The bird wants just as pure clean water to drink as any person does, and he will not keep in health if obliged to drink impure water. A piece of cuttle-fish bone should be kept in his cage, and a raw apple, cabbage leaf, and plantain in its season should be provided. Aim to give one or the other of these things every day the year round. Occasionally, give a piece of bread soaked in milk, but never cake or candy. Once a week, give boiled egg mixed with cracker. Never hang any birds in a draft, or the wind, and never set them out of their cages. In moulting time, give a dusting of cayenne pepper to their egg and cracker, or bread and milk.

If a bird has diarrhea, put a piece of rusty iron in his water. If constipated, give a piece of sweet apple, or a leaf of lettuce. If he has a cold, and is hoarse, sprinkle a piece of fat, salt pork with cayenne pepper and hang it in his cage, and do not allow him to bathe for several days. If troubled with lice, dust sulphur among his feathers, and scald the cage well. If his claws become crooked, and it is difficult for him to use the perch, trim them with a sharp knife. In doing this, hold the bird firmly in your hand, with his feet turned up. Persons often say their bird is lame, when the real trouble is, his claws need trimming. Give the above rules a trial, and you will not have any trouble in keeping your canary healthy.

Recipes for All Seasons.

MILANS.—Stir to cream one-quarter pound of butter with one-quarter pound of sugar, add the yolk

Figs. 3 and 4.—MEDALLION PLAQUES.

of two eggs, stir into this one quarter pound of sifted flour and two tablespoonfuls of white wine. Work it quickly onto a smooth dough. Place in a cold place—on ice if possible—for an hour, then roll it out to one-quarter of an inch in thickness, cut into fancy shapes, brush them over with beaten up egg, and bake in a moderately heated oven. These cakes remain fresh a long time, if kept in a dry cool place.

OMELETTE AU CONFITURE. — Mix four eggs, a pinch of sugar, one of salt, three tablespoonfuls of flour, and one quart of milk, to a very smooth batter. Melt a piece of butter, the size of a large hickory nut, in an omelette pan, and bake one very thin cake on one side only, when of a nice yellow on the under side, put it on a heated plate, and spread it on the unbaked side, which has to be thoroughly cooked, with currant or raspberry jelly, roll it and place on the dish, keep it quite hot, continue until all are baked, then powder them with fine sugar and serve.

SNOWFLAKES.—In a teacup stir to cream a lump of butter the size of a small hickory nut, together with a scant teaspoonful of sugar, a tiny pinch of salt, and three eggs; then stir in enough flour to make a dough. If too stiff to stir with a teaspoon, turn it out onto a bread board lightly sprinkled with flour, and with the fleshy part of your thumb knead it and roll it over and over, gradually working in as much air as possible, and sufficient flour to make it a stiff dough. Keep the board only lightly sprinkled with flour, and work the dough, until, when taking it up into your hand, you see many tiny air blisters all over it; then cover it with a bowl for twenty minutes. In the mean time put plenty of fresh lard into a narrow deep frying pan, —as for frying crullers—and heat it sufficient to fry the cakes quickly, without browning them. When nearly ready, cut off a piece of the dough, roll it out as thin as a sheet of paper, and cut it into strips of two and one-half inches in length by one and a half in width. Then between your forefingers and thumbs pull each piece gently yet quickly in length and width, to get it as thin as pos-

Fig. 5.—LANDSCAPE.

Fig. 6.—SHELL PLAQUE.

sible, drop it into the lard, lightly dip it under with the fork, turn it over, take it up, and place it on a sheet of blotting or absorbing paper. These cakes require but one to two minutes to cook, and must not get brown. Therefore it is best, if two persons attend to the frying, one to roll out, cut and pull them, while the other is frying them. Sift powdered sugar over them, when arranging them in the basket. These cakes are very delicate and brittle, and are best the same day they are made. This quantity will fill two cake baskets.

BOYS & GIRLS' COLUMNS

Elsie's Violets.

LOUISE BORCHERS.

"Flowers! Who'll buy my flowers?" This was the timid cry of a little girl of about ten years of age, who, with a basket of fragrant violets, was wandering up and down the streets of a large city in America. She was a pretty sight, with her large black eyes and shining curls, and her poor but neat dress.

"I do wish somebody would buy my flowers; mamma will wonder why I am away so long. Oh, here comes a sailor man, perhaps he will buy some." And gathering up all her courage, she went up to him and said, "Don't you want to buy some flowers, sir?" Doubtless the sailor's bright, cheery face had attracted the little one.

"Yes, my little girl; I'll take some of your violets."

While she was choosing the bunches, he said:

"What is your name, little girl? You seem to be very young to be in the streets alone."

"My name is Elsie Graham. Mamma is sick, so I coaxed her to let me pick some of our violets, and sell them, so as to make some money."

"Well," said the sailor, "you are a very good little girl to try and help your mother along, and to help you, I will take the rest of your flowers."

"Oh, thank you, sir; but I must hurry home, for mamma will be worried. Good-bye, sailor-man."

"Good-bye, my little dearie." "God bless the pretty little thing. She reminds me of my own little daughter, I left at home twenty years ago. God knows where she is now."

"Oh! mamma, look at all the money I've got!" With this exclamation Elsie, our little flower girl, bounded into the room where her mother was lying.

"Oh, Elsie, darling, are you back safe? I have been so worried for fear something would happen to me or you."

"Yes, mamma, safe and sound, with a pocketful of money, and lots of good things," said Elsie, putting her basket down and kissing her mother.

"Just see, mamma, one dollar and fifty cents, beside the good things in the basket," said she, holding out the money for her mother to see. "A nice sailor-man bought all I had left, just as it was getting so dark. I knew I must come home, and I wanted to sell them all so much. Now, mamma, lie still and rest, and I'll soon have a good supper ready for you."

After they had partaken of their simple evening meal, Elsie said, "Mamma, if you are not too tired, will you tell me all about my sailor grandpa?"

"Well, my dear, when I was a little girl, I lived in a village on the coast of England, and my father used to go away on long voyages. When I was about ten years old, he was going away on a trip from which he would not return in two years. My dear mother dreaded to have him go—she knew the dangers of the sea and feared he might never come home again. The evening he bade us good-bye, I picked him some of our violets, he put them in his buttonhole, and said he would keep them always to remember his little Elsie. My mother and I stood at the door, and watched him until he was out of sight; then she took me in her arms, and wept the whole night. That was the last time we ever saw him. Ten years passed, and we had received no tidings. But one day a sailor came, and told us that the vessel on which my father had sailed, had been lost at sea, and all on board had perished. After this sad news, mother seemed to pine away, and her one desire was to go away from the cruel sea. I had been married to your father in the meantime, and we took her to the pretty little village of E———. There she died. Soon after you were born, dear. Then your father having heard so much of America, induced me to come here. When we arrived, we went to one of the large cities. But I had never lived in the city, and I kept pining for the country, so finally having saved enough money, he bought this little home. One of the things which I had brought from our old home in England was some roots of our violets. I planted some in this little garden, and so we have had them ever since. We lived happily enough until the day that your poor father was brought home dead. Only think, just two years ago. Oh, Elsie, what should I have done without my little sunbeam during that dark time? But for you I would have been willing to die. Only for your sake, I must live and struggle on, as best I can. Oh, my darling, it almost breaks my heart to think that you must go in the streets and earn a living, while I lie here, helpless." Overcome with feelings which she could not control, the sick woman's form shook with sobs.

Little Elsie tried to comfort her mother, saying: "Oh, mamma dear, don't cry, you have your little Elsie, and this nice house and garden."

"Yes, my pet, but how long shall we be able to keep it? If I don't get well, we will be obliged to move to the city, where I may find employment."

The next morning little Elsie was up betimes gathering and arranging her slender stock of flowers. After making her mother comfortable, she started out with her basket on her arm. Either people were in a hurry this morning, or they did not care for flowers, for our little flower girl walked around until afternoon, and succeeded in finding but a few purchasers. Just as she was about to give up in despair, and go home, she spied her sailor acquaintance on the opposite corner, and she hurried across to speak to him.

"Hello, my hearty," said the old sailor, "here you are again, bless your pretty face! But your load seems to be rather heavy today. I'll take some of your flowers, to lighten it a bit."

"Oh, thank you, sir; but I'd rather you wouldn't, because—because, you might think that I only spoke to you so that you would buy some of my flowers. I was so glad to see you again that I couldn't help but speak."

"Ah! my little maiden, I am right glad that you like the old sailor. Would you mind if I walked home with you? I should like to see the garden where those pretty violets grow."

"Oh, I should like it ever so much, sir."

The two trudged along, the old man beguiling the time by telling her stories of sailor life.

"But now tell me something about yourself, little one."

"Well, sir, papa is dead; he was a carpenter, and one day he fell from a big ladder, and then he was brought home dead. Mamma has not been well since. Before papa died we moved into this nice little cottage, where we live now. Mamma does not like it as well as I do, because when she was a little girl like me, she used to live by the sea, and she always likes to be near it. Mamma's father was a sailor, I guess that is the reason why I like you so much."

"Where did your mother live, when she was small?"—"I think it was in C—, sir, in England."

"HE WAVED THEM A FAREWELL WITH HIS RED BANDANNA."

Drawn and Engraved for the American Agriculturist.

"In C—?" said the old man, starting back in surprise. "If it should be, if it only could be, my daughter?"—"Here is where I live, sir," said Elsie, as they reached a little, old-fashioned cottage, standing in the center of a large garden. In front of the house were beds of lovely English violets, which gave forth a most delightful odor. Behind the house were a large number of fruit trees, now in full blossom. As soon as Elsie opened the door, sailor Ben's eyes fell on a picture hanging on the wall; he recognized it as one which had been taken of his wife in the happy days when they lived in England.

When the door opened, and Elsie's mother came into the room, he tried to rise, but could not. She looked at the sailor for some time, without saying a word; but after long and earnest gazing at his face, she cried: "Father, oh father, have you come back to me at last?" "Yes, my daughter, come home never to leave you again," said the old man, with tears running down his cheeks.

"Now, mamma, you will get well, won't you?" And in her excitement little Elsie ran from her mother to her grandfather, saying, "Oh! I am so happy! But dear me, I have forgotten that you and grandfather must want your tea, so I must get it ready." "What, do you make the tea?" said her newly-found grandfather. "Yes, indeed, she is quite a little housekeeper;" said her mother fondly. They sat up until a late hour, talking

Fig. 1.—SKELETON OF A BAT.

about the past. "How was it, father, that they brought back the report that you were lost?" "Well, my dear, you know the ship was wrecked, and all of our crew, except one sailor and myself, perished. We managed to swim to an island, and stayed there until we were picked up by a vessel bound for Africa. When we landed there, one day my companion and I were lost in the jungle. We were taken captive by some of the African tribes, and held as prisoners for quite a while, but finally we succeeded in making our escape. When we reached the sea coast, we found employment on board of a vessel bound for England. Old Tim Lockhart and I must have been the only survivors of the wreck, and the vessel returning from Africa, must have brought the tidings that finally reached you. I arrived at home to find it occupied by strangers. No one seemed to know anything about you, except that you had married, and that you had all gone away together. I left the place wholly disheartened. Jim was made first mate and I captain of a ship bound for this city, and I was just going around to see the sights when I happened to spy little Elsie. I noticed her pretty violets, and they reminded me of those which grew in our garden, and of which your mother was so fond. Elsie reminded me of you when you were her age. I came this afternoon to have a chat with 'my little flower-girl,' as I called her, not daring to hope that I might find my daughter again."

"Oh father, to think that the very trial which I thought so hard to bear, has brought you back to me. It was a hard thing for me to let Elsie sell flowers in the street. But there was no help for it, for ever since my husband died, we have been getting poorer and poorer, and sometimes we have been almost without food." "My dear daughter, you shall not know want any more, if God is willing to spare me yet for a few years." "Oh, mamma, I shall never like any flowers half as well as I do violets, because they brought me my kind old grandpa," said the happy little girl, caressing the old sailor, on whose knee she had been sitting all the while he was talking to her mother. "But, my daughter, it is twelve o'clock, and I am afraid our little Elsie will lose all her roses, if she stays up so late. Let us thank our kind heavenly Father that he has brought me safe home again." And kneeling down, the old man poured out his soul in thanksgiving to God.

As soon as Elsie's mother was able to travel,

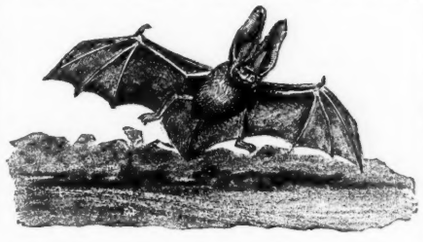


Fig. 2.—THE LONG-EARED BAT.

they went back to England in sailor Ben's ship. But old Tim Lockhart—who rejoiced with all his heart at his mate's good fortune—declared himself weary of a sea-faring life, and purchasing Mrs. Graham's neat cottage, with its garden, orchard and fields, settled down there for the remainder of his days, with his household gods around him. The last remembrance the Grahams had of America, was the sight of the ex-sailor in the garb of a truck gardener, his wrinkled face one tangle of tears and smiles as, on the morning of their departure, he leaned over the rail fence, waving them a farewell with his red bandanna (represented in our engraving on the opposite page), and wishing them "God-speed," while he whistled "Nancy Lee," to conceal his feelings. Little Elsie was soon a great favorite with the sailors on board the vessel, who called her the "little violet girl," for she had brought with her several plants of violets, and was seldom without one in her hand, or somewhere about her. When they reached England, they bought back their old homestead. Little Elsie never forgot the good the violets had brought her, and when she grew up and married, she called her little baby girl "Violet."

The Doctor's Talks.

One of my young friends asks me to tell him something about bats, whether they are birds or mammals. There are few animals about which so many superstitions have been believed from very early times, as the bat, and even now the creatures are by

Fig. 3.—A HIBERNATING BAT.

many regarded with dread. When one of them flies into a room at night, all hands give chase, and the useful little insect hunter is too often killed. Our bats are quite harmless, and the stories of blood-sucking, told of those in South America, are only partly true. Our bats, of which we have about half a dozen, are all small, being but a few inches in length, but there are those in the East Indies, the wings of which have a spread of four feet. These monsters are fruit eaters, and do not attack animals at all. The early naturalists classed the bats with the birds, but their ability to fly is the only thing they have in common with birds.

BATS ARE MAMMALS,

as those animals are called, which suckle their young, and differ from other mammals in their having long fingers, over which a thin skin is stretched, reaching to the hind feet and tail; this forms the wings. A view of the skeleton of the bat, figure 1, shows how very long these fingers are, and how they are attached to the wing—all save the one which answers to the thumb; this is free from the wing, and usually ends in a hook, by which the animals can suspend themselves. The hinder feet are supplied with stout claws, by which they also hang when at rest. The eyes of the bat are so small and hidden by hair, that it was at one time supposed that they had no eyes, and "as blind as a bat" is a proverb still in use. However it may be as to their sight, their senses of smell and hearing are very acute. Some bats, like the Long-eared Bat of Europe (figure 2), have enormous ears, and

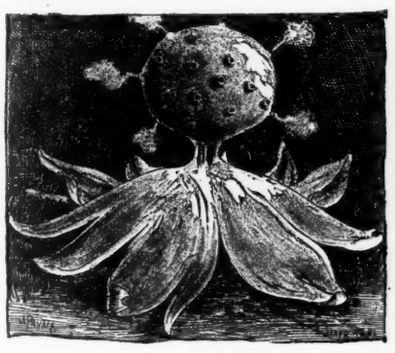


Fig. 4.—EARTH STAR.

some species have curious leafy appendages to their nose, which are thought to aid the sense of smell. Bats are nocturnal in their habits, flying at night with great rapidity, and whirling about with the ease of a bird, in their chase after night flying insects, of which they consume great numbers. In the day time, they secrete themselves in old buildings, in caves, in hollow trees, and such places. In Texas there are a number of churches which, when that State belonged to Mexico, were built by the missionaries among the Indians. These are now deserted, and more or less in ruins. I visited one of these buildings that had been taken possession of by the bats, which hung to the timbers of the open-work roof, and wherever they could get a foot-hold, in myriads. Upon being disturbed, they would set up a tremendous chattering, and, although it was daytime, would fly about our heads in swarms. Some idea of their great numbers may be formed from the fact that their droppings covered the floor to a depth of three or four feet.

BATS ARE HIBERNATING ANIMALS,

at least in all cool countries. Those animals which live upon insects and other living prey, when cold weather comes on are deprived of their food, and must either migrate to a warmer climate, as do most of the birds, or must go into a dormant state, and sleep all winter. This last is called hibernating, from the Latin word for winter. Squirrels and other animals lay up a store of food to last them through the winter months, but the bat finds some retreat, where, hanging itself by its claws, (as in figure 3,) it wraps its ample wings around its body and goes into a long sleep, in which it remains until spring returns. Experiments have failed to show that the animal breathes in this state, which is one of completely suspended animation. Bats are difficult animals to keep in captivity, as to flourish they must have living food. They will only eat bits of meat when starved to it, but will devour all the flies, etc., that are supplied to them. Though so graceful and rapid in its flight, the bat

is a miserable and helpless object when it attempts to walk. It pulls itself from side to side in a zig-zag manner, in which it gets ahead but slowly.

PUFF-BALLS AND EARTH-STARS.

Young people who live in the country make the acquaintance of many things, which those in the city never see, and rarely even hear of. Many of you, in going across a pasture or field, especially in autumn, have no doubt met with Puff-balls. These are bladder-like, brownish balls, from the size of a small orange, up to sometimes (in the Southern States) two and three feet. These usually have an opening in the upper part, and if pressed or squeezed, will give off a cloud somewhat like smoke. This dust consists of minute grains, which under favorable circumstances will grow and reproduce the plant, as seeds do in other plants, and are called spores. The Puff-balls when cut open, at first, show a solid, white mass, but after a while the whole interchanges, and becomes a powdery mass of spores. If taken before this change takes place, and the interior is still solid and white, the Puff-balls are eaten. They are cut into slices and fried in butter, and are highly esteemed by those who tried them.

EARTH-STARS.

Closely related to the puff-balls, are the earth-stars, which are usually much smaller. These have a double covering; one like a puff-ball, which is surrounded by a thicker, tougher covering. When the earth-star is mature, this outer covering bursts, and separates in many pointed divisions, which spread out on the ground, in a form which suggested the name earth-star, as shown in figure 4, in the center of which is the little puff-ball. This ball usually has a single opening at the top, from which the spores issue, but the one shown in figure 4, a common species in Europe, has numerous openings, from which the clouds of spores escape. In most earth-stars the puff-ball portion sits directly upon that which forms the star, but in this case the ball is supported upon numerous small supports. The scientific name of earth-star is *Geaster*, which is derived from two names meaning *Earth* and *Star*. Some have the rupture of the star-like portion made so forcibly that the whole affair is thrown to the distance of several feet; in one species the divisions are thrown so far back that the star rests upon the points. We have usually found earth-stars most abundant in open, dry pine or cedar woods.

THE FLOWERING OF INDIAN CORN.

The Indian corn, besides its great importance as a food supply, is a most interesting plant to study, as its flowering presents points quite unlike those seen in most other plants. In order that you may understand this, I must remind you of what I have told you before. In most flowers you find in the very center of the flower the pistil or pistils, which will in time ripen into the fruit or pods, but before it can do this it must be acted on by the pollen, a (mostly) yellow powder, which is produced by the stamens, bodies produced around the pistils. In common language the pistils are called the female parts, and the stamens the male parts.

PERFECT AND SEPARATE FLOWERS.

If both stamens and pistils are in the same flower, the flower is said to be *perfect*. If these are in different flowers, they are *separated* or *imperfect* flowers. When the stalks of corn have "tasselled," the stalk grows very little, if any taller; it ends its upward growth, by producing a cluster or branching panicle, upon the branches of which are sterile, or staminate, flowers, which produce pollen for fertilizing the pistils. Where are the pistillate flowers? Along the sides of the stalk you will find leafy cylinders, and when you open these by tearing off the leaves, the *husk*, there will be found a body, the cob, upon which are closely crowded the pistillate flowers; the flowers are very rudimentary and appear unlike ordinary flowers. It would take too long to show that they are real flowers, consisting mainly of an ovary, that part of the pistil which will ripen, and become the grain or kernel. At the top of the ovary, you will find the style, the elongated part of the pistil, which extends until its upper portion will reach beyond the end of the husk, and convey the influence of the pollen down to the lowest ovules. These styles together form what is called the *silk*. The pollen produced by the staminate flowers of the tassel falls upon the exposed end of the pistil, and in some manner that we cannot readily explain, causes the ovule to grow and ripen, and become a seed. A short time ago, Mr. Geo. G. Lobdell, New Castle Co., Del., sent us a *tassel*, from the center of which is borne an ear, but without any husk. I found a similar *tassel* several years ago, and have heard of others. Still more rare is it, to find staminate flowers borne around the cob and within the husk, of which I have seen but one specimen. In staminate flowers, we almost always find traces of, or rudimentary pistils, and *vice versa*, where pistillate flowers have the rudimens of stamens, just little suppressed pistils, ordinarily of no use. In the case where pistillate plants are produced in the tassel, these rudimentary pistils, from some cause, are developed. You will find that the commonest plants will often present singular departures from the normal or usual structure, and I hope when you come across them, you will send them to THE DOCTOR.

RACCOONS AT HOME.

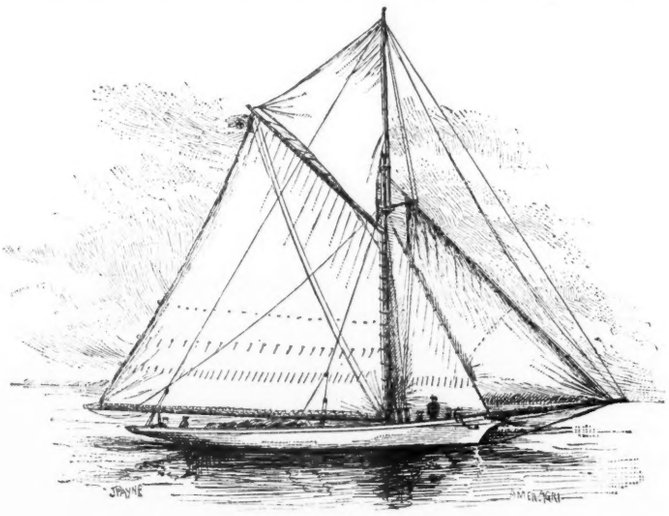
Raccoons, Wild and Tame.

The Raccoon is a member of the bear family, and is found from Newfoundland to the Pacific coast, and is especially abundant in the Southern Atlantic States, where coon-hunting, or "cooning," is a favorite sport with the negroes. The raccoon (*Procyon lotor*) is about twenty-three inches long, with a tail about a foot in length. The color of its fur is a grayish white, with black tips. The muzzle of the raccoon is very sharp and its face has an expression of cunning and mischief. The bushy tail has five black rings and five rings of a rusty white. The coon breeds in hollow trees, and the young, which soon begin to exercise their powers of climbing, are easily caught. If tempted to tame and catch young coons—don't, for besides a monkey no more mischievous creature exists than a young tame coon. One of our lady friends, who had been having some painting done at her country house, set the paint pots in an empty fireplace, before which was set a fireboard. A couple of tame coons discovered the paint, upset the pots, and having well bedaubed their paws, started out on a voyage of discovery. They left their tracks all over the house, and the agony of that housekeeper may well be imagined. We once visited the camp of a gentleman who had several coons tame enough to go to the woods where they were caught and come back as they pleased; they were thought to be very funny, and so they were. We had taken the gentleman a bundle of cigars, of a kind that he liked. This bundle, wrapped in a paper, was laid on a bench; but the coons found it, and were no doubt happy, for the next morning cigars were to be found scattered all over the camp. There was no end to the mischief that these, more or less tame, coons perpetrated in that camp. The ordinary coon lives upon the eggs and young of birds, which its great climbing powers allow it to capture. It also, as the engraving shows, is a clever fisherman, and also seizes young ducks and other aquatic birds, and makes a raid upon the hencoop when it gets a chance. One species in Brazil gets its living by catching crabs, which it does with great dexterity. The raccon is very fond of green corn, and makes its incursions into fields when the "corn is in the milk." On the whole the coon, in spite of its cunning ways, must be classed amongst vermin—an animal not to be encouraged, save in those States where the negroes can hunt it.

Solution of Enigma in the September Number of the Am. Agriculturist.—Echo.

Story of the "America's" or "Queen's" Cup.

The America's cup was first won by the schooner yacht America, in 1851, in a race of the Royal Yacht Squadron around the Isle of Wight, she sailing as one of a large fleet of schooners and cutters. Her commander was Commodore John C. Stevens, of New York. The prize was then called the "Cup of all Nations," and the race was the grand wind-up to the London Exhibition of the Industry of all Nations. She beat the fastest of her competitors by eight minutes and eight seconds. Her victorious owners, who were Commodore Stevens and several members of the New York Yacht Club, brought the cup to this country, and, after several years, decided to make of it an international challenge cup. For this purpose they placed it by deed in the custody of the New York Yacht Club, as trustee. By this deed, any foreign yacht can compete for it on six months' notice.



AMERICAN YACHT "VOLUNTEER."

Drawn and Engraved for the American Agriculturist.

The first to attempt to restore the cup into British hands was Mr. James Ashbury. In 1870 he sent over his schooner yacht "Cambria," with a formal challenge. He was made to race against the whole fleet of the New York Club's yachts, it being then held that as the "America" had won the cup against a fleet, the same conditions should prevail in future races. The "Cambria" was badly beaten. Her owner was not discouraged, however, and immediately on his return to England had a yacht built especially to try for the cup the following year. He named her the "Livonia." That year, through Mr. Ashbury's protests, it was decided that he must race with four yachts, the "Sappho," owned by Mr. W. H. Douglass; the "Dauntless," the property of Mr. James Gordon Bennett, Jr.; Mr. Rutherford Stuyvesant's yacht, the "Palmer," and Mr. Franklin Osgood's "Columbia." There were seven races, the best four to win. The "Sappho" won two, the "Columbia" two, and the "Livonia" one—thus keeping the cup here.

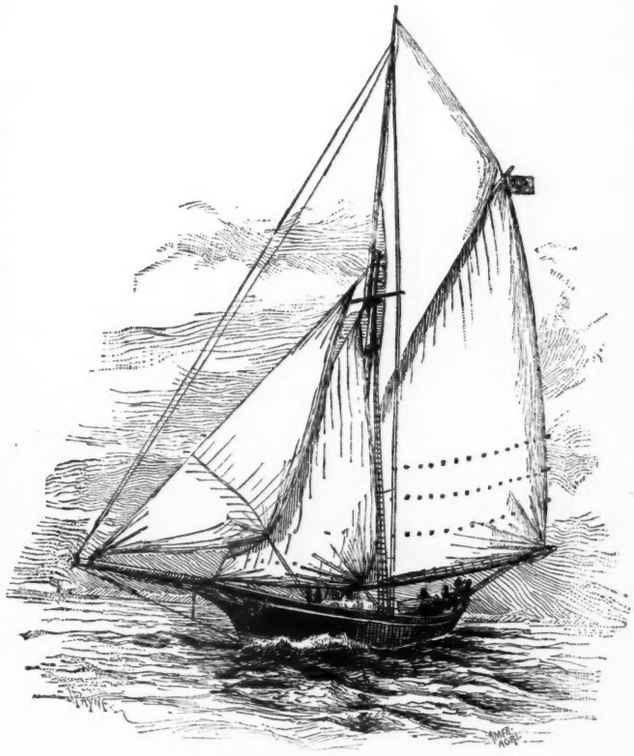
Not until 1876 did the next challenge arrive. This time it came from Canada. Major Charles Gifford proposed to win the cup with his yacht, the "Countess of Dufferin." The Major, though he did not succeed in his object, succeeded, however, in having it decided that but one defender for the cup should be named. The club selected Commodore Jacob Voorhis, Jr.'s, yacht "Madeleine," and she won easily. Five years elapsed after this without a challenge, and then, in 1881, Canada tried it again. This time a Captain Cuthbert sent the sloop "Atalanta," of the Bay of Quinte Yacht Club. The "Mischief," owned by Mr. J. R. Bush, was named as defender of the cup, and she won the first two out of three races. She beat the "Atalanta" by twenty-eight minutes and thirty seconds in the first race, and by twenty-eight minutes and fifty-four seconds in the second.

The next challenge came from Sir Richard Sutton, of England, in 1885. He sent over the "Genesta" to take the cup back to England. This aroused the liveliest interest among the yachtsmen, and a number of the members of the Eastern and New York Clubs had the "Puritan" built especially to meet the "Genesta." The graceful New Englander did all that was expected of her, and captured the first two races. In the first she beat the "Genesta" sixteen minutes and nineteen seconds, and in the second one minute and thirty-eight seconds.

Last year Lieutenant Henn sent over a challenge and followed it with the "Galatea." To meet her, Gen. Charles J. Paine's "Mayflower" was constructed. In the trial races, the latter came out ahead, and was selected to defend the cup. She did this nobly, winning two races, in one of which she beat the "Galatea" twelve minutes and twenty-three seconds, and in the other twenty-nine minutes and nine seconds.

This year the interest in the race is greater than ever, for the fastest yacht Great Britain ever built is now here to do her best to win. She is the "Thistle," owned by Mr. James Bell, Vice Admiral of the Royal Clyde Yacht Club. She was built expressly for the race. Before leaving for this country she won numerous races and a great name for herself by reason of her remarkable speed. Her dimensions are—length over all, one hundred and twelve feet; length on water-line, eighty-five feet; beam, twenty feet and three inches; depth, fourteen feet and one inch; load tonnage, ninety-five tons; displacement one hundred and thirty-five tons. She is a very handsome vessel, long and rakish; but is much less like a cutter (heretofore the Englishman's pride and boast) and more like an American sloop than any other challenger for the cup. The length of her spars is about as follows: Main boom, eighty feet; bowsprit outboard, thirty-eight feet; mainmast, above deck, seventy feet; spinnaker boom, seventy feet; topmast, forty-five feet. She is painted black above the water-line and red below. There is a ribbon of gold at the foot of the rail. Her long clipper bow gives her a very rakish appearance, but her forward lines are rather angular to the eye. Her overhang is unusually wide at the taffrail, much more so than that of any American sloop, with the possible exception of the Priscilla. She came over with a crew of twenty-five, but this number will be added to for the races. She is commanded by Captain John Barr.

When it became known that the "Thistle" was really designed to compete for the "America's" cup, Gen. Paine decided to have built a steel yacht which he hoped would surpass in speed both the "Puritan" and "Mayflower," and in fact every other American yacht. Thus far it would seem as if he had been successful, for the "Volunteer"—as he has named her—has won nearly every race in which she has taken part, and will undoubtedly be selected to defend the cup. The "Volunteer" was designed by Mr. Edward Burgess. She is one hundred and seven feet over all; eighty-six feet on the water-line; twenty-three feet and two inches beam, and ten feet and four inches deep. Though there is a general resemblance in her outline to the "Puritan" and "Mayflower," yet she differs from them in several important particulars. The "Volunteer" is fuller at the harpings than the "Mayflower," and she is considerably finer in her after body. She is also leaner at the garboards, her midship section below the water-line being fined down more than in either of the other two yachts. Her keel, also, has considerably more camper than the "Puritan" or the "Mayflower," its deepest part being just abaft her center, sloping up gradually to the stern-post, while forward the rise is more pronounced; from a point just forward of the mast, it rises quickly in a straight line, and at the forefoot is not over two feet below the water-line. She is painted white above the water-line and below that a bright red, the red being carried about four inches above her calculated line. She has only about a foot of bulwark, which is very thin mahogany, topped with an oak rail, and fastened to locust stanchions. The races will take place on September 27th and 29th, and if a third trial is necessary, it will be on October 1st.



SCOTCH CUTTER "THISTLE."

Drawn and Engraved for the American Agriculturist.

Studies in Natural History.

There is no more interesting and instructive study for children than the habits and characteris-

Fig. 1.—ZEBU.

tics of animals. The following illustrations of curious species in animal life are from the American Agriculturist Cyclopedia of Natural History, published September 1st, and already sent to many of our readers, old and young.

Figure 1 represents the Zebu, an interesting variety of the ox tribe of India. It differs not only

Fig. 2.—EARTH-HOG.

in size, being smaller, from the common ox of Europe, but in having a curious fleshy hump upon the shoulders. The tail is considerably shorter also. These oxen are often used as beasts of burden, and their flesh is good as food. As in the American bison, the fleshy hump is considered a great delicacy.

Fig. 3.—MARMOSE.

The Earth-hog or *Aard-vark*, figure 2, is found everywhere in South Africa, but being a night prowler it is rarely seen. Its length is about five feet, the tail being twenty inches long. It lives on

Fig. 4.—KOALA.

white ants, at night attacking and tearing down the ant hills, and sweeping up its victims with its long tongue, which is covered with a glutinous secretion to which the insects adhere.

Figure 3 shows an interesting form of South American Opossum, the Marmose. It is about six inches long exclusive of the tail. Instead of a pouch this animal has two longitudinal folds near the thighs which serve to inclose the young, which it has the singular habit of carrying about with it on its back.

Another genus of this class is the Kaola of New South Wales, figure 4. It is about two feet in length, and of an ash-gray color. When the young have become too large for shelter in the pouch of the mother, they mount and are carried about upon her shoulders.

Figure 5 represents the Iguana of South America, one of the largest herbivorous lizards. They

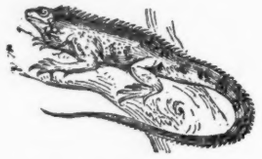


Fig. 5.—COMMON IGUANA.

are often four or four and a half feet in length, of a beautiful brilliant green when young, but afterward of a dull, ugly gray-green, made hideous, especially in the case of the male, by a curiously jagged, raised ridge along its back and by an enormous dewlap. They live about the banks of rivers.

The Alligator of our Southern States is familiar to most of our readers. In figure 6 is shown the head of the Gavial, its Indian representative. The

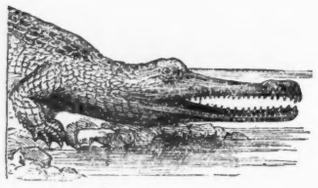


Fig. 6.—HEAD OF GAVIAL.

Gavial is distinguished by its very long and narrow snout, and is of much use as a scavenger, consuming the carcasses of drowned animals that if left undisturbed would pollute the waters to a dangerous extent. It reaches a length of about eighteen feet.

Rays or Skates are an interesting genus of fishes; they feed on flat fish, shell fishes, and crustacea.

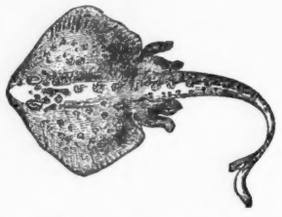


Fig. 7.—STARRY RAY.

There are five species on the Atlantic coast. Figure 7 represents the Starry Ray of Europe.

The largest bird next to the Ostrich is the Emu, figure 8. It inhabits Central Australia, where it was formerly very common, but is decreasing rapidly. It feeds on fruits, roots, and herbage, and generally flocks. The nest is a shallow ground pit, and contains from nine to thirteen eggs, in color varying from a bluish-green to a dark bottle green, which are hatched by the male bird, the period of incubation lasting from seventy to eighty days.

One of the most gorgeous groups of birds are the parrots, a prominent form of which are the Cockatoos. All have crests, and in the Crested Cockatoo, seen at figure 9, this crest consists of three colors.

Figure 10 represents the Hammerheaded Shark,

Fig. 8.—EMU.

so-called because of the broad, flattened extension of the head on each side, which gives it the shape of a blacksmith's hammer. The eyes are placed at either end of the projecting extremities, and the mouth is set quite below. The tropical regions are

Fig. 9.—TRI-COLOR CRESTED COCKATOO.

the headquarters for these bloodthirsty creatures, but one species of Hammerhead is found from Cape Cod southward.

Figure 11 shows a most remarkable animal which

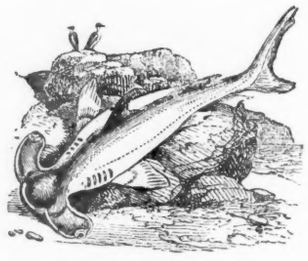


Fig. 10.—HAMMER-HEADED SHARK.

is now extinct, our engraving having been taken from a specimen restored according to the formation of a skeleton found in South America. It was

Fig. 11.—MEGATHERIUM (restored).

about eight feet high, its body twelve to eighteen feet long, and its fore-feet were armed with claws.

[Copyright, 1887, by the O. JUDD Co. All rights reserved.]

Rural Life of James A. Garfield.

J. M. BUNDY.

There was a vast and essential difference between Garfield, the Farmer, and such distinguished agriculturists as Washington, Jefferson and Jackson. Garfield was an actual farmer, in the primitive and practical sense of the word. Destined, above all other famous Americans excepting Franklin and Lincoln, to be a representative of the possibilities of the typical American citizen, as developed by American institutions, he showed in his marvelous career how the poorest boy can rise to the hights of achievement along the common pathways. He was Teacher, State Senator, Citizen-Soldier, Congressman and President, and in all these lines of development he was an American of Americans, a genuine product of his environments and the master of them. And he was an equally true representative of the average American farmer, who actually directs in person the work that he can not do himself, and sets the example of intelligent and thorough farming by his own skillful and energetic work.

The agriculturist Presidents from the South were "gentlemen farmers," even when they were not the aristocratic lords of large estates, with bevies of slaves to carry out their theories of farming through the medium of overseers. They wielded a power on their farms or plantations that was more absolute than any English nobleman possessed, and their "farming" was invested with a sort of romantic glamour which the average Northern farmer, however numerous his "hands" or extensive his acreage, could not impart to his prosaic operations and daily routine.

But Garfield's peculiar early experience, the traditions of his father's achievements in "cutting a hole in the forest," and of his heroic death, the enjoyment of physical labor and the imagination that invested it with genuine and wholesome romance, helped to make him an exceptional representative of the real "Farmer" of the American type. The stories of the physical prowess, energy and endurance of his father in making the "clearing" in the forest of Orange, and of his terrific fight with fire that cost his life, were as full of romantic interest to young Garfield as any of the old Norse legends were to the Scandinavian boys of the heroic times. And the still more marvelous stories of his mother's execution of her desperate resolve to maintain for her four young children what the physical prowess of her husband had cut out of the woods, were greatly added incentives and inspirations for the future farmer of Mentor.

Trained in all ways to the work of the farmer from boyhood, loving his work and doing it in a spirit that ennobled it and made it a school of manliness and high endeavor, he set an inspiring example to all future American farm boys. Even after many years of public life that afforded no opportunities for renewing his contact with the soil, he never forgot, or lost the benefits of, his early training. He was a farmer by instinct, by early acquired habits and predilections, and by associations that never lost their charm and power.

So his brief but suggestive statement as to how he came to buy the modest farm which was destined to acquire national fame, reveals the readiness with which he recurred to his old relations with the soil. While he was spending the summer of 1876 on Little Mountain, near Hiram, his love of farm life came back to him with irresistible force, and he said to himself, to use his own language: "I must either go tossing about in summer at watering places, at a heavy expense, or I must get some place where my boys can learn to work, and where I can myself have some exercise—touch the earth and get some strength and magnetism from it. I saw this farm [at Mentor, Ohio], for sale, and late in the fall of 1876, just as I was about setting out for Washington, I bought it on five or six years' time."

As to this purchase Garfield added: "I bought this place in 1876—one hundred and eighteen acres for one hundred and fifteen dollars an acre, and subsequently I bought forty acres adjoining at a hundred dollars an acre, because the owner had a right of way, that was an annoyance. For both of these places I gave my notes, secured by mortgage, paying five thousand dollars down on one, and one thousand on the other. In my first insurance case, where I was associated with Curtis, I was paid fifteen hundred dollars, and in the second case I got thirty-five hundred, just before I made the purchase on this larger tract—those two amounts made the five thousand payment. I have been paying for the place along in instalments, according to the contract, which was that it should be paid for from time to time during five years. The mortgage still stands against it uncancelled, but as I have paid I have taken up the notes. Then I spent about four thousand on the house and grounds. This was an old house, only a story and a half high. I have lifted it up to two stories, and I have repaired the fences, and put the farm generally into good order."

This is a very succinct and business-like statement in regard to a transaction that was more directly important to Garfield, in its relations to his health, strength, mental equipoise, and power and happiness, than all other acquisitions that his limited means allowed him.

The Mentor farm has been so often described with the greatest particularity of details, and is so much like many others along the old turnpike road from Cleveland to Buffalo, that there is no occasion for an extended account of it here and now. The farms along this old natural highway had some peculiar advantages. They had a comparatively narrow frontage, as it was desirable that they should run back to the "ridge," from a quarter to half a mile, and across the rich alluvial soil under the "ridge," in the flat valley that was formerly the bed of the lake. The highway on the elevated plateau presents more the appearance of a sparsely settled street than that of a country road, as the small frontages brought the farm houses into friendly neighborhood. Such vicinage was exceedingly favorable to the tastes and wants of the highly intelligent and religious settlers of the old "Western Reserve," who needed and would have school-houses, rural "meeting houses," and social life.

The frontage of the Mentor farm, at the time I visited it, in June and July, 1880, was only about fifty rods. The house was unpretentious, about sixty feet of front and fifty feet deep, with broad piazzas and an artistic roof, and in its internal arrangements adequate to a generous hospitality, though far from being equal to the great and ceaseless demands made upon it in 1880, and in the early part of 1881. There were fine grass-fields in front and on the south-western side; a croquet ground between the house and the road; an orchard and garden on the east, and a lane in the rear leading to the "ridge" and the valley beneath. A little to one side of the rear was the small "office" that was the workshop of Garfield and his Secretaries, and was the headquarters of that part of the Presidential campaign which came under Garfield's own energetic supervision. The best architectural features of the house were due to the excellent taste of Mrs. Garfield, and the best room was constructed with special reference to the comfort of "Mother Garfield," who was the master spirit of the household whenever she chose to assert her supremacy.

To the working of the farm Garfield gave the fulness of his energies, and his practical skill and experience. He drained a wet and uncultivated field between the "ridge" and the Lake Shore railroad. He put a hydraulic ram in the low land near the ridge, which kept a constant flow of spring water that was adequate for the needs of his house and out-houses, and for the stock. He kept adding to the equipment of his farm as his time and means would allow, erecting a work-shop and a tool-shop, and getting the best agricultural machinery. He made no fanciful experiments, and had neither the means nor the inclination for "fancy farming," nor for high-priced stock of any sort. In all the farm work he was equal to any two or three ordinary "hired men," and set them all an example of efficiency, zeal and skill.

How thoroughly he gave himself up to the most energetic sort of personal farming he incidentally discloses in one of his letters to his protege and friend Hinsdale, dated Mentor, May 13, 1877, when he said: "You can hardly imagine *how completely I have severed my mind out of its usual channels* during the last four weeks. You know I have never been able to do anything moderately, and to-day I feel myself lame in every muscle with too much lifting and digging. *I shall try to do less the coming week.*"

These few terse sentences tell what sort of farmer Garfield was, and how his contest with the soil rested his overworked brain and recreated his splendid physical energies.

The Mentor farm, now historic, has been greatly improved since Garfield died. Mrs. Garfield found there the happiest associations of her life, and has made liberal expenditures, with her characteristic good sense and fine taste. It is a farm house whose naturally cheerful and attractive features have been made more and more worthy of the residence of the heroic widow of the martyred President, whose pupil and comrade in his studies, and sagacious adviser and efficient helpmeet, she was. The magnificent liberality of the American people has enabled her to maintain a large city establishment at Cleveland, and the Mentor house; but the latter became more and more her favorite, and she has made it one of the most attractive of all the country places in Northern Ohio. May she live long to enjoy the scenes that are endeared to her by the happy years of the life of Garfield, the Farmer.

The State Fairs.

New York State Fair.

The forty-seventh annual exhibition of the New York State Agricultural Society was held at Rochester, September 10th to 14th. It was highly successful, despite the damp and cloudy weather. In the departments of live stock, implements, poultry, fruit and flowers, the displays were large and fine. The refreshment department was wholly under the charge of the Woman's Christian Temperance Union. One of the new and special features consisted of thirty students of the State Industrial School working at their various trades in Mechanics' Hall. A proposition was received by the Directors from the city of Syracuse, offering to donate one hundred acres of land for exhibition purposes, provided the Fair should be permanently located there.

Pennsylvania State Fair.

This fair, held at the Society's grounds at Germantown Junction, Philadelphia, from September 5th to 17th, was far more successful than the preceding one. The many new buildings which have been erected during the year furnished convenient and ample accommodations for exhibitors, as well as the public, and the attendance throughout the fair-day was satisfactory. Agricultural Hall presented a varied and lively scene, and many of the exhibits of implements and farm machinery were highly creditable. In the main building the Philadelphia manufacturers of and dealers in fancy, household, furnishing, and ornamental goods, etc., displayed their wares to good advantage. In the horticultural department Henry A. Dreer's exhibit formed a most attractive feature; and in the various live stock departments many of the most famous animals of the State claimed the attention of crowds of interested visitors. Altogether the managers may be proud of their success.

Ohio State Fair.

The thirty-eighth annual fair of the Ohio State Board of Agriculture was held at Columbus, from August 29 to September 2. The grounds and buildings had been greatly improved since the fair of last year, and the occasion was highly successful in all respects. The exhibits exceeded in number and variety those of all previous fairs of the Ohio State Board. The displays of live stock and implements were particularly large and interesting. The grounds were well policed, and intoxicating liquors or games of chance were rigidly excluded. The fair was, on the whole, eminently successful.

Maine State Fair.

The State Fair of Maine was held on the neat and well furnished grounds at Lewiston, September 6 to 9. It was one of the largest and most successful State fairs ever held in Maine. All classes of live stock were well filled, the exhibits including, in addition to the breeds usually seen, some of those less known, as Sussex cattle and Dorset sheep. More than a hundred pairs of working oxen were shown. In implements, field crops, fruit and other departments, the display was remarkably fine. Maine farmers have every reason to be gratified with their State Fair.

POTATOES IN JERSEY.—Jersey—not New Jersey, but the island of Jersey—is an important "annex" to England. That charming island, best known to us as the home of a peerless breed of cattle, is to London and other large cities an important source of early vegetables and fruits. One of the most important crops of the island is early potatoes. We described some time ago the manner in which seed potatoes are treated in Jersey, in order to forward the crop as much as possible. The crop is dug at the end of June and the early part of July, and during the digging season as many as one thousand van-loads are sent to the English markets, mainly to London, each day. A van is a large market wagon, holding several ordinary cart-loads, but if it held but one, it would be many potatoes to send from the island in a single day.

Chat with Readers.

Plant Named.—Mr. E. R. Evans, Ontario county, New York. The plant is the Two-colored Golden-rod, *Solidago tricolor*.

Old Friends.—James F. McKee, Armstrong Co., Pa., in renewing his subscription for 1883, writes us: "It is now thirty years since I first received the *American Agriculturist*, and I have not missed many years. Have I not done pretty well?"—C. F. Curtis writes us from Massachusetts: "Enclosed please find $3.00 for renewal of my subscription for two years, or I may forget it next year."

A Grapevine Insect.—Mr. W. Craig, Province of Quebec, Canada. Your letter, when it came to hand, contained only a dry and much broken grape leaf, with no signs of living or dead insects. It is of no use to send insects in a letter. Always send in a box, whether dead or alive. Not knowing what the enemy is, we would advise a trial of some general insecticide, like the kerosene emulsion.

Dakota Wheat.—Mr. Colin C. Thomas, Stutsman county, reports the farming interests in that section as encouraging. On thirty-two thousand acres in wheat, on the Dalrymple farm, an average of eighteen bushels to the acre was gathered this year. Railroads are pushing out in all directions. The Coteaux are being occupied by stockmen; they find excellent pasturage, good water, and can make an abundance of hay. Stock from drought affected neighboring States are being driven in.

Keeping Milk in Hot Weather.—C. R. Van Emmons, of Lampasas county, Texas, asks how he can keep his milk and butter cool during the "heated term," the milk souring before dinner in spite of its being placed in vessels in the spring and in draughts of air with wetted cloths enveloping it? Expel the animal heat from the milk by placing it in shallow pans in spring water and stirring it while cooling them: when it is of the temperature of the water, put it in a tightly covered vessel, and submerge it in the spring. Use as soon as taken out, and have separate vessels so as not to disturb the bulk.

The Veterinary Profession.—Mr. James F. Smith, Wetumpka, Alabama, writes us: "Is the profession of a veterinary surgeon a respectable occupation, and is it followed by men of marked intellect?" To which we answer that the veterinary profession is as respectable and honorable an occupation as a man can choose for his life's work, and to excel in it is well worth the ambition of any one. To become a first-class veterinarian requires almost as much knowledge and skill as are necessary in the practice of medicine, and men like Drs. Liautard, Law, Salmon, Michener, and other eminent veterinary surgeons, stand in the first rank among scientists and professional men.

A Grass in a Corset Box.—Some one sends us a grass about four feet high, and doubled several times to get it into a box in which had been somebody's "Corralline Corsets." There was no indication with the grass as to where it came from, and no letter of explanation. Many specimens of grasses and other plants come to us in this blind way, which is very annoying, and detracts greatly from the pleasure of identifying the plants. Always send with grasses and all other plants some clue to the locality, and the person from whom they came. The grass in question is the "Johnson Grass," *Sorghum Halepense*, a grass being much cultivated in the Southern States, and no doubt of great value. Its trial in Northern localities is recommended.

Caterpillars in New Jersey.—Mr. E. N. L. Creveling, Warren county, New Jersey, says that the fruit trees of all kinds, in his locality, "are alive with caterpillars," and asks what to do to save the trees. Not knowing the insect, we should advise a trial of the kerosene emulsion, made as follows: Thoroughly stir kerosene with half as much milk, until the oil is no longer visible; add this emulsion of kerosene to twelve times as much water, and keep for use, applying with syringe or spraying pump. The admixture of kerosene and milk can be easily effected by placing them in a bottle, and thoroughly shaking.

Tubs for Water Lilies.—G. W. Drew, Nantucket county, Massachusetts, has two tubs made by cutting a vinegar barrel in halves. In these he intends to plant water lilies, but the water put in them tastes and smells after vinegar. Mr. Drew desires to be informed whether the vinegar would injure the plants, and if so, how it can be remedied. The vinegar would certainly injure the water lilies. To clean the tubs, fill them with strong lye, made from wood-ashes or potash, or with lime water, let stand a few days, wash with boiling water, and the tubs will be ready for the plants.

Embitters the Milk.—F. M. Gevaltney, Logan county, Arkansas, sends for a name, a plant which is abundant in the Arkansas River Valley, where it appears after the "Dog Fennel" (*Eupatorium fœniculaceum*) dies out. The cows eat it, and it makes their milk very bitter. The plant is the "Slender-leaved Sneezewort" *Helenium tenuifolium*, a native of the Southwestern States, but has spread to the Southern Atlantic States where it has become a troublesome weed. The books give it as an annual, but it looks more like a perennial. In either case, mowing it before it flowers would at least diminish its abundance. In some localities it has, like many other bitter plants, a reputation for the cure of fever and ague.

The American Pomological Society.—This important body convened at Boston on Wednesday, September 14th, continuing the sessions for three days. By far more interest was manifested than ever at any previous biennial gathering, and the attendance of eminent Pomologists and Horticulturists was very noteworthy. Among the many gentlemen who called at this office on their way en route were: Hon. P. J. Berkmans, President of the Georgia Horticultural Society; Mr. W. G. Green, of the Ohio Experiment Station; C. A. Uber, of Virginia; E. S. Buswell, formerly Secretary of the Massachusetts Horticultural Society. The delegation from the Farmers' Club of the American Institute of New York to the Convention at Boston, headed by Dr. F. M. Hexamer, of the *American Agriculturist*, was as follows: F. M. Hexamer, J. B. Rogers, E. Williams, A. S. Fuller, P. T. Quinn, S. B. Parsons, Herbert Parsons, J. T. Lovett, T. Grenier, William Falconer, E. H. Libby, Ezra Osborn, E. T. Field, J. H. Wright, T. S. Force, A. J. Caywood, W. A. Caywood, D. Baird, E. S. Buswell, H. Hendricks, Wm. S. Carpenter, Thos. Kearns, Dr. I. P. Trimble.

The Next World's Fair.—Public sentiment is so strong in demanding a New World's Fair, that one undoubtedly will be held very soon in the United States. Where shall it be located? By all means have the World's Fair on Staten Island, the most desirable site and most attractive suburb of the great metropolis of the country. "I have traveled the wide world over," remarked ex-Governor Hoffman to the writer, a few years since, as he came up the Bay of New York, "and in all my travels I have seen no spot so lovely and attractive as Staten Island. It is indeed the 'Gem of the Sea.'" Ships from every part can now land with the products of every clime at Staten Island's capacious wharves. In fact the water and rail facilities for reaching the Island with the products of the world are just such as a World's Fair should command. Furthermore there are facilities for housing and feeding a million of people, more or less, who might come to stay during the progress of the great Exposition. Twelve years have now elapsed since the closing of the great Exposition at Philadelphia. The wonderful growth and development of the country during that period call for another exposition, and, we repeat, by all means locate it down the Bay of New York, on the "Gem of the Sea."

The Death of C. M. Hovey.—The head of the house of "Hovey & Co.," nurserymen in Cambridge and seedsmen in Boston, died on Sept. 1, at the ripe age of 73. He was for fifty-five years an active member of the Massachusetts Horticultural Society, and active in the erection of that magnificent granite temple now occupied by the society on Tremont street, probably the most magnificent building devoted to horticulture in the world. In the literature of horticulture Mr. Hovey was long prominent, and in the "Magazine of Horticulture," better known as "Hovey's Magazine," which he began in 1835, and continued for thirty-five years. In 1848 he began the publication of the "Fruits of America," a work most beautifully illustrated with colored plates. His production of "Hovey's Seedling" marked an era in strawberry culture in this country, as it was the first really good variety that originated on our cultivators. Mr. Hovey made many experiments with Japan and other lilies, which were attended with marked success. In hybridizing the Camellia, he was notably successful, and in a recent visit to England some of his hybrids were sold on advantageous terms. Mr. Hovey had a most remarkable memory. We have seen him name ob cure varieties of pears in a manner that few others could equal. Few men have done so much for the development of pomology on our continent as C. M Hovey, whose name and memory will always have a place among the brightest stars of American horticulturists.

SEE PAGE 446 FOR INTERESTING MATTER.

FUNNY HITS! FUNNY CUTS! SELLS LIKE FUN!

"SAMANTHA AT SARATOGA"

BY JOSIAH ALLEN'S WIFE. AGENTS WANTED.

"*Sez Josiah, as he looked down and see some wimmen a passin' below; sez he, "I never see such a sight in my life; a man can see more here in one evenin' than he can in a life time at Jonesville."*" —Extract from book.

"This book is not only inexpressibly and irrepressibly amusing—it has a purpose and a mission. It is an evangel of the keenest, slyest, wittiest and drollest sarcasm and irony on the follies of fashion. In short, Miss Holley is, so to speak, a Widow Bedott, Mark Twain, Don Quixote, Petroleum Nasby and Sam Slick rolled into one, and intensified by a bright woman's wit and indescribable way of putting things."—*Lutheran Observer.*

See the SPLENDID SUCCESS OF AGENTS!

One made	First 3 Weeks -	$138.00
One "	First 6 Days - -	94.50
One "	First 10 Days -	145.00
One "	First 3 Days - -	26.50
One "	First 3 Weeks -	103.50

A CLEAN PROFIT in 7 Weeks, $307.50!!

It takes off **Saratoga** *follies, flirtations,* low necks, *dudes, pug dogs,* etc., in the author's inimitable *mirth provoking* style. The (100) pictures by "Opper" are "*just killing.*" People crazy to get it. **Agents** are making **$50 to $75 a week.**

PRICE (by mail or Agent).....$2.50.

For an **Agency** apply to **HUBBARD BROS., Philada., or Kansas City.**

JACKSON BROTHERS,
New York State Drain-Tile and Pipe Works,
MAIN OFFICE, 88 Third Ave., ALBANY, N. Y.

ROUND, SOLE AND HORSE-SHOE TILE.
Over 13 Inches Long. By Cargo or Smallest Quantity. Price List on Application. Prices that cannot be undersold.

Our new improved Machinery makes a Superior Round Tile, excelling anything offered before and at greatly reduced prices. First premium wherever exhibited. Drain-Tile Machines for sale.

JAMES PYLE'S

PEARLINE

The BEST thing ever invented to make all kinds of washing and cleaning comparatively easy.

ABSOLUTELY HARMLESS.

We hold thousands of Testimonials from Chemists, Newspapers and Private Parties.

BEWARE OF IMITATIONS.

TO KEEP IT SWEET **CIDER** or prevent *Secondary* FERMENTATION.

USE IMPROVED

PRESERVING POWDER.

It does not impair the taste or flavor, is thoroughly reliable and *absolutely harmless to the human system.*

SEND 35 cts. for a sample, forwarded free; sufficient for 40 gallons. One pound, sufficient for 8 Bbls., $1.50, receiver to pay charges, or $1.80 by mail, prepaid. Price lower in larger quantities.

W. ZINSSER & CO., 197 William St., New York.

BIRCH'S KEY WILL WIND ANY WATCH AND NOT WEAR OUT.

SOLD by watchamkers. By mail, 25c. Circulars free. J. S. BIRCH & CO., 184 Lewis St., N. Y.

H. W. JOHNS' ASBESTOS LIQUID PAINTS.

Asbestos Roofing, Building Felt, Steam Packings, Boiler Coverings, Fire Proof Paints, Cements, Etc.
Samples and Descriptive Price Lists Free.
H. W. JOHNS MF'G CO., 87 MAIDEN LANE, N. Y.

LEGS AND ARMS.

(ARTIFICIAL.)

With Rubber Hands and Feet.

The most natural, comfortable, and durable. Thousands in daily use. New patents and important improvements. **U. S. Gov't. M'f'r.** Ill. Pamphlet of 160 pages sent free.

A. A. MARKS,
701 Broadway, New York.

THE AMERICAN MAGAZINE.

BEAUTIFULLY ILLUSTRATED.

This Magazine portrays American thought and life from ocean to ocean, is filled with pure high-class literature, and can be safely welcomed in any family circle.

PRICE 25c. OR $3 A YEAR BY MAIL.

Sample Copy of current number mailed upon receipt of 25 cts.; back numbers, 15 cts.

Premium List with either.

Address:
The American Magazine Co., Publishers,
130 & 132 Pearl St., N. Y.

GET UP CLUBS.

JONES

HE **PAYS the FREIGHT**
5 Ton Wagon Scales,
Iron Levers, Steel Bearings, Brass Tare Beam and Beam Box for
$60.
Every size Scale. For free price list mention this paper and address
JONES OF BINGHAMTON,
BINGHAMTON, N. Y.

$75 TO $150
PER MONTH easily made, selling
The AUTOMATIC STEAM COOKER
Outfit FREE. Territory FREE. Steady Employment. Apply for Terms at Once.
WILMOT CASTLE & BRO.
ROCHESTER, N. Y.

SCHOOL ADVERTISEMENTS.

TELEGRAPHY Is a first-class trade can be quickly learned at our **school,** 2,500 graduates at work. We will teach you thoroughly, and put you at work in either **Commercial or Railroad Telegraphy.** The Great West is the country to grow up in. Write for our circulars. **VALENTINE BROS., JANESVILLE, WIS.**

WALNUT LANE SCHOOL,

and WELLESLEY PREPARATORY (formerly Madame Clement's) Boarding and Day School for young ladies. 31st year opens Sept. 21. Academical and College Preparatory Courses. For circulars address
MISS ADA M. SMITH, | Principals,
MRS. T. B. RICHARDS, | Germantown, Philadelphia.

200,000th COPY JUST ISSUED.
The **Manual of Phonography,** by Benn Pitman and Jerome B. Howard. A perfect Self-Instructor in Phonetic Short-hand. Sold by booksellers, or
The Phonographic Institute, Cincinnati, O.

N. E. OHIO NORMAL COLLEGE,

Canfield, Ohio. Board and Tuition, $26 for ten weeks. Entrance any time. REV. E. B. WEBSTER, A. M., President.

ENGINEERING DEPARTMENT, VANDERBILT UNIVERSITY.

Distinct courses of *Civil, Mechanical* and *Mining Engineering* [*Annual tuition* **$65**], and in *Manual Technology* [Free]. **Full Faculty.** Extensive equipments and facilities in draughting-rooms, laboratories, shops and field practice. **Session opens Sept. 21st.** For circulars address **WILS WILLIAMS, Bursar,**
Nashville, Tenn.

Coleman National Business College
NEWARK, N. J.
Open all the year. Best course of Business Training. Best facilities. Pleasantest location. Lowest rates. Shortest time. Most highly recommended. Write for Catalogue and be convinced.
H. COLEMAN, Prest.

MISCELLANEOUS ADVERTISING.

SEDGWICK STEEL WIRE FENCE.

The best Farm, Garden, Poultry Yard, Lawn, School Lot, Park and Cemetery Fences and Gates. Perfect Automatic Gate. Cheapest and Neatest Iron Fences. Iron and wire Summer Houses, Lawn Furniture, and other wire work. Best Wire Stretcher and Plier. Ask dealers in hardware, or address,
SEDGWICK BROS., RICHMOND, IND.

A Complete House for $65.

We are now manufacturing complete portable houses at a cost of from $65.00 up to $500.00, suitable for all seasons of the year, in all climates. They can be made to answer either for residences, with sitting-room, dining-room, bed-room, kitchen, etc., etc., or for wings of houses, for out-buildings, for temporary storage houses, for a temporary dwelling in the forest when lumbermen and others wish to be away from home for the winter months, or for camping out anywhere. They are likewise very popular for hunters who are going away on long expeditions into the forests, or by the side of remote lakes. They can be most successfully used by people who wish to erect light summer houses or observatories on high points on their farms or elsewhere. They are likewise adapted to be used as temporary school-houses or churches. All persons desirous of building small homes can secure one of these houses at a much cheaper price than they can build one. They can then sheath it to suit their own wants and desires. Indeed, one of these houses does not cost more than the ordinary expense of plumbers and masons who are employed in constructing dwellings. No nails or screws of any kind are used, and all of the fastenings are iron pins and bolts. The sides and roof of these houses are three-ply veneer. The houses can be easily put up or taken down without mutilation. They are very light and durable, and are furnished in different sizes and designs. Write to the *American Agriculturist,* whose publishers have purchased one for their farm, and get their opinion. Send a stamp for catalogue with detailed particulars, and illustrations, showing size, hight and general appearance, inside and out, of each style of building.

Address **RÖNNE & BARBOUR,** MANUFACTURER'S AGENTS, **No. 81 New St., New York.**

P. S.—We can ship these houses to any point on ten days' notice. South America, Mexico, or to any other points, near or remote.

TREES, PLANTS, SEEDS, ETC.

Our Autumn Catalogue of

BULBS AND PLANTS

is now ready, and will be mailed free to all who apply. It offers, among **Bulbs,** the now famous **Bermuda Easter Lily** (a single plant of which has borne 140 beautiful white flowers!), with a list of the best **Hyacinths, Tulips, Narcissus,** etc.; and among **Plants** all the fashionable varieties of **Winter Flowering Roses, Begonias, Bouvardias, Carnations,** etc.

PETER HENDERSON & CO.,
SEEDSMEN AND FLORISTS,
35 and 37 Cortlandt Street, New York.

BULBS.

Our Illustrated Autumn Catalogue of DUTCH BULBS, SEEDS, PLANTS, and SMALL FRUITS, is now ready, and will be mailed on receipt of 2-cent stamp. It contains a complete list of well-grown and selected stock.

Henry A. Dreer,
SEEDSMAN & FLORIST,
714 CHESTNUT STREET., PHILADELPHIA.

TREES Fruit & Ornamental.
ROSES
GRAPE VINES

FALL PLANTING. We offer the largest and most complete general stock in the U. S., besides many **Novelties.** Catalogues sent to all regular customers, **free.** To others: No. 1, Fruits, 10c.; No. 2, Ornamental Trees, etc., illustrated, 15c.; No. 3, Strawberries; No. 4, Wholesale; No. 5, Roses. **Free.**
ELLWANGER & BARRY
MT. HOPE NURSERIES, ROCHESTER, New York.

PEACH TREES

WORKED ON NATURAL STOCKS.

An immense stock, including **Globe, Ford's Late, Roser, Yellow Mystery, Tong-Pa, Japan Hardy,** &c. Descriptions, hints on Peach Culture, and low prices, and Catalogue of Fruit Trees and plants of all kinds mailed applicants.

J. T. LOVETT, Little Silver, N. J.,
Introducer MONMOUTH Strawberry and ERIE Blackberry.

600 ACRES. 13 GREENHOUSES.

TREES AND PLANTS

We offer for the Fall trade a large and fine stock of every description of **FRUIT** and **Ornamental TREES, Shrubs, Roses, Vines, SMALL FRUITS, Hedge Plants, Fruit Tree Seedlings** and **Forest Tree Seedlings.** Priced Catalogue, Fall of 1887, mailed free. *Established* 1852.

BLOOMINGTON (PHŒNIX) NURSERY
SIDNEY TUTTLE & CO. Proprietors, BLOOMINGTON, ILL.

IMPORTANT TO NURSERYMEN AND DEALERS!

The Finest Stock of Apples, Standard and Dwarf Pear, Plum and Peach Trees,

EVER OFFERED TO THE TRADE, AT BOTTOM PRICES.

Also a full line of **GENERAL NURSERY STOCK.** Write for particulars, stating quantity, size, varieties, etc., wanted. **SMITHS, POWELL & LAMB, Syracuse, N. Y.**

NEW AND RARE WINTER FLOWERING PLANTS.
—LARGE STOCK OF—
Fruit Trees, Dutch Bulbs, etc.

DUTCH BULBS.—Large Importations, direct from the leading growers in Holland. First quality Bulbs, Beautiful Hot-house Plants, Palms, Orchids, Roses, etc., well-grown, cheap. New Pears, new Peaches, new Cherries, new Grapes, new Strawberries, &c., with a large stock of all kinds of Fruit Trees, Shrubs, &c. Catalogues mailed to applicants. **JOHN SAUL, Washington, D. C.**

1838. POMONA NURSERIES. 1887.

Parry, Lida and Bomba Strawberries, Marlboro and Golden Queen Raspberries, Wilson Jr., Erie and Minnewaski Blackberries, Niagara, Empire State and Moore's Early Grapes, Lawson, Kieffer and LeConte Pears, Wonderful and Globe Peach, Spaulding and Japan Plums, Delaware Winter and Red Cider Apples. All the worthy old and promising new varieties. Catalogue Free.
WM. PARRY, Parry, N. J.

ORIENTAL FRUITS

A specialty. A large stock of Fruit Trees, including **Kelsey's Japan, Botan** and **Ogan** Plums, and **Russian Apricots,** on **Plum Stocks. LeConte Pears** one and two years old, extra fine; other Pears on LeConte stocks; **Yellow Transparent** Apples, **Peen To** and **Honey** Peaches. Catalogue with facts, free.
Address **W. F. HEIKES,** Mgr. Huntsville Wholesale Nurseries, **Huntsville, Ala.**

379 VARIETIES OF **FRUIT TREES, VINES, PLANTS,** ETC.
Apple, Pear, Peach, Cherry, Plum, Quince, Strawberry, Raspberry, Blackberry, Currants, Grapes, Gooseberries, &c. Send for Catalogue
J. S. COLLINS, Moorestown, N. J.

PEACH TREES.
Delaware and Maryland growth. Healthy, free from yellows. Globe, Chair's Choice, Lady Ingold, Elberta, Gudgeon's Late. 12 other new kinds, with all the standard sorts.
D. S. MYER & SON, Bridgeville, Del.

PEACH Trees, very fine, for this fall's planting. Buds selected with great care from the healthiest trees in this vicinity. Natural seed shipped to me **direct** from Tenn. Price $4 per 100, Cash. WALTER MORRIS, Dover, Del.

SEEDS New Crop Ky. Blue Grass, Orchard Grass, Meadow Fescue or English Blue Grass, Johnson Grass now ready. Estimates on any quantity. Orders with cash filled at lowest market price. Ill'd Catalogue, everything for Farm and Garden, free. (Est'b. 1838.)
J. M. McCULLOUGH'S SONS, Cincinnati, O.

$4 TO $5 A DAY at your own house; desirable permanent business. Circulars on application. Address SUBSCRIPTION, Box 939, N. Y. Post Office.

600,000 PRIME 2-YEAR APPLE Seedlings. These seedlings are very strong and healthy. Price reasonable. Enclose 10 cents in stamps for sample by mail.

100,000 APPLE TREES, 2 TO 4 years; unsurpassed in growth and beauty. Also, 100,000 Peach trees 1 year from bud, **very fine.**
Address **STEPHEN HOYT'S SONS, New Canaan, Connecticut.**

ROYAL PALM NURSERIES.
Rare Plants for Tropical and Semi-Tropical America.
For the Northern Greenhouse and Window Garden.
NATIVE FLORIDA PLANTS. NEW AND RARE EXOTICS, constantly arriving.
TROPICAL PLANTS A SPECIALTY.
Descriptive Catalogue of 93 pages mailed to any address upon receipt of 15 cents.
REASONER BROS., Manatee, Florida.

200,000 PEACH TREES, INCLUDING GLOBE and 75 best varieties, suitable for all sections. They are grown from Healthy, Natural Seed, are Healthy and True to Name. A large stock of Apple and other Fruit and Ornamental Trees. **Prunus Piscardi** (Purple-leaved Plum), **Prunus Simoni,** and Japan Plums. A large stock of Wilson Early, Early Harvest, and other Blackberry, and all small fruit plants. Concord, Moore's Early, Martha, Niagara, and other Grapes, all stock of best quality. All packed to carry safely free of charge. No travelling agents. For Price List, address CHAS. BLACK & BRO., Village Nurseries, Hightstown, N. J.

10,000 JUNE BUDDDD GLOBE PEACH Trees.—Grape-Vines, Fruit Trees, Strawberry Plants, etc. Price list free.
S. C. DECOU, Moorestown, N. J.

GRAPES PLANTS of **Best Quality.** Warranted true to name. **Lowest Prices,** and **Largest** Assortment of **old** and **new** varieties. At dozen rates, **free by mail. Special attention** called to **Promising Novelties.** *Send for Price-List.* Address
BUSH & SON & MEISSNER,
BUSHBERG, Jefferson Co., Mo.

PUMPKINS.

We need a large quantity of Pumpkins in October. Shipments to be made in car lots. For particulars, address
D. CUMMINS, Conneaut, Ohio.

SULPHO TOBACCO SOAP.
UNIVERSAL INSECTICIDE
—FOR—
Flowers, Vegetables, Trees and Animals.
Samples by mail
ROSE M'F'G. CO., 17 So. William St., N. Y.

AGENTS! CANVASSERS! Have you seen our rapid, sight-selling Specialty? Particulars FREE. Address F. H. REYNOLDS, 217 West 38th Street, New York.

JUST PUBLISHED. RE-WRITTEN AND ENLARGED.

Practical Floriculture;

A GUIDE TO THE SUCCESSFUL CULTIVATION OF

FLORISTS' PLANTS,

FOR THE

AMATEUR AND PROFESSIONAL FLORIST.

By PETER HENDERSON,

Author of "Gardening for Profit," "Gardening for Pleasure," "Hand-Book of Plants," "Garden and Farm Topics," "How the Farm Pays," etc.

Having himself been very successful, the author of this work plainly shows others the steps by which that success was attained. We know of no other work which tells so clearly, and without reserve, the methods of successful floriculture. His effort seems to be to show the beginner how to begin in the most economical manner, and to carry on plant-growing successfully. All the teachings are of the most practical kind, from the building of the cheapest and most profitable houses, to those of a more costly character, for the forcing of flowers in winter. The various methods of propagating plants on a commercial scale are given in detail, with admirable clearness. Indeed, the work throughout justifies its title of Practical Floriculture. This edition is not a mere reprint, but has been largely re-written, and brings the author's methods and experience up to the latest date, with much new matter and new illustrations.

ILLUSTRATED.

CLOTH, 12mo. PRICE, POST-PAID, $1.50.

OUR RURAL CATALOGUE.—New Edition.
Describing over 300 Valuable Works on **Agriculture, Horticulture, Architecture, Horses, Cattle,** and **Field Sports.** Fully Illustrated, and containing Contents and Descriptive Matter of Works mentioned. 80 Pages, 8vo. Sent on receipt of 6 cents for mailing.

SPORTSMAN'S COMPANION.—NEW EDITION.
A beautifully Illustrated, and highly Descriptive Catalogue of all the Standard and New Sporting Books, in the various departments of Hunting, Fishing, Boating, and Athletics. 40 pages, 8vo. Sent on receipt of 5 cents for mailing.

FREE TO ALL.

Send your address immediately, on a postal card, for our 32mo. finely illustrated Catalogue of some 300 Rural Books, and it will be sent you, **FREE,** by the Publishers, **751 Broadway, New York.**

O. JUDD CO., DAVID W. JUDD, Pres.
751 Broadway, New York.

MACHINERY, TOOLS, FARM IMPLEMENTS, ETC.

Warranted not to blow down off the tower, and that our Geared Windmills have double the power of any other mill in existence.

Mfrs. of Tanks and Windmill supplies of every description and the Celebrated Challenge Feed Grinders, Horse Powers, Corn Shellers, Pumps and Brass Cylinders. Send for Catalogues and Prices.

GOOD AGENTS WANTED.

Always Buy the Best *Geared or Pumping Mills on 30 days' test trial.*

Challenge Wind Mill & Feed Mill Co.,
Batavia, Kane Co., Ill.

PORTABLE MILL MANUFACTORY.

ESTABLISHED, 1851.

28 SIZES AND STYLES OF PORTABLE FRENCH BURR MILLS

Received Highest Awards
At the St. Louis, Cincinnati, Indianapolis, and New Orleans Fairs and Expositions.

SEND FOR MILL BOOK AND HOW TO GRIND.

Complete Mill and Sheller, $100. A boy can keep it in order and in operation. Adapted to any kind of power.

COMPLETE MILLS ON ROLLER PROCESS, CORN MEAL, HOMINY, GRITS, PEARL MEAL, STARCH.

NEW AND SECOND HAND BRADFORD AND STRAUB MILLS IN STOCK.

NORDYKE & MARMON CO., Indianapolis, Ind.

EVERY FARMER

THE BEST is the CHEAPEST — HIS OWN MILLER

WE HAVE HAD **32 years Experience.**

Use the **Halladay Standard Geared Wind Mill, I-X-L Corn Sheller** and **I-X-L Iron Feed Mill** and do your shelling and grinding at home, thus saving toll and teaming to and from the Grist Mill. This work can be done rainy, windy days, when out-door work is suspended on the Farm. The same Mill will cut corn stalks, saw wood, run churn and grind-stone, pump water, etc.

We manufacture the **Halladay Standard Geared and Pumping Wind Mills, I-X-L Corn Sheller, I-X-L Iron Feed Mills, I-X-L Stalk Cutters,** Horse Powers, Jacks, Saw Tables, Standard Haying Tools, consisting of Anti-Friction, Reversible, Swivel and Rod Hay Carriers, Harpoon and Grapple Horse Hay Forks, Pulleys and Floor Hooks. Also a full line of Tanks, Tank Fixtures and Pumps for Farm, Ornamental, Village and Railway purposes. Send for catalogue and prices.

Reliable Agents wanted in all unassigned territory.

U. S. WIND ENGINE & PUMP CO., Batavia, Ill.

THE PERKINS' Wind Mill

is the Strongest and Best Self-Regulating Wind Mill made. Full instructions for erecting sent with the first mill. **All Wind Mills warranted.** For Circulars and Prices address

The Perkins' Wind Mill & Ax Co.,
Agents wanted. **Mishawaka, Ind.**

LEFFEL'S IMPROVED IRON Wind Engine

Strongest and easiest regulated **All Working Parts** made of **Malleable Iron.** Catalogue Free. Address

SPRINGFIELD MACHINE CO.
SPRINGFIELD, OHIO.

$50 PER DAY! $50 PER DAY! $50 PER DAY!

WELL MACHINERY.

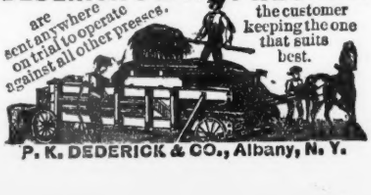
RUST'S Portable Walking Beam Wood Rig, with Mast or Bolted Tower Derrick, mounted or on Sills, and

RUST'S Portable Eagle Well Drilling Machine, mounted or on Sills, Steam or Horse Power. Send for Catalogue.

EMPIRE WELL AUGER CO., Ithaca, N. Y.

DEDERICK'S HAY PRESSES.

are sent anywhere on trial to operate against all other presses.



the customer keeping the one that suits best.

P. K. DEDERICK & CO., Albany, N. Y.

KELLY'S DUPLEX GRINDING MILL

For CORN and COB, SHELLED CORN, COTTON SEED and all kinds of GRAIN.

The Best GRINDING MILL Made.

Made in Sizes from 2 to 12 Horse Power, and to Grind from 8 to 50 Bushels per hour.

The **ONLY MILL** that grinds on both sides of the Revolving Burr, giving **DOUBLE THE GRINDING SURFACE OF ANY OTHER MILL MADE.**

EVERY MILL FULLY WARRANTED and SATISFACTION GUARANTEED. Send for Circular and Price List to

SPRINGFIELD ENGINE & THRESHER CO. Springfield, O.

Also Manufacturers of Springfield Traction and Portable Engines, Springfield Vibrating Separators, Kelly Horse Powers, Etc., Etc.

The "OHIO."

FAMOUS ENSILAGE AND

FEED CUTTERS.

They are more **substantial, easier to operate,** have **greater capacity,** are **less liable** to **accidents** than any other Cutters. We build nine sizes, six for power, **furnished with or without carriers.**

Send for Catalogue and Treatise on Ensilage.

SILVER & DEMING MF'G CO., SALEM, OHIO.

HENION & HUBBELL, 55 North Clinton Street, CHICAGO, } Western Agents.

VICTORY CORN MILL.

IMPROVED. Made in four sizes for hand or power. The only successful mill for grinding corn and cob together. Capacity, 8 to 40 bushels. Also grinds all kinds small grain coarse or fine.

For Circulars, address THOS. ROBERTS, Springfield, O.

QUAKER CITY DOUBLE REDUCTION GRINDING MILLS.

FOR CORN AND COB, FEED & TABLE MEAL

A. W. STRAUB & CO.
3787 Filbert St., Philada., Pa.
189 Water St., New York City, N.Y.
42 West Monroe Street, Chicago, Ill.

STEVENS' CORN —AND— COB MILL

Mill and Crusher can run together or independently. The only combined genuine

FRENCH BUHR STONE MILL made.

Pat. Dec. 14, 1886. Send for catalogue of Mills & Sheilers.

Mention this paper.

A. W. STEVENS & SON,
AUBURN, N. Y.

FARMERS BUY THE DAISY

New Style Hand or Power CORN SHELLER. The Fan cleans the Corn as it comes out. THE QUESTION IS ASKED why we sell our Shellers so cheap. ANSWER: We build them in winter after our CLOVER HULLER trade is over. All are warranted to do good work or no sale. **NEWARK MACHINE CO., Columbus, O.**

BLACKSMITHING on the FARM

Save time and money by using Holt's celebrated **FORGE and KIT of TOOLS For $20**

Larger Size, $25. Single Forge, $10. **Blacksmiths' Tools, Hand Drills, &c.**

HOLT MFG. CO., 51 Central Way Cleveland, O.

GRIND YOUR OWN Bone, Meal, Oyster Shells, Graham Flour & Corn, in the $5 HAND MILL (F. Wilson's Patent), 100 per cent. more made in keeping Poultry. Also POWER MILLS and FARM FEED MILLS. Circulars and testimonials sent on application. WILSON BROS. Easton, Pa.

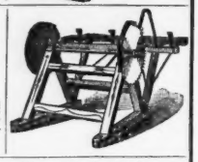
MACHINERY, TOOLS, FARM IMPLEMENTS, ETC.

APPLETON · MFG. · CO.

MANUFACTURERS

Modern Hero Horse Powers and Grinding Mills,
American Grinding Mills, 26 sizes and styles,
Badger Corn Shellers, Badger Seeders,
Common Sense Wood Saws, Drag Saws,
Smalley Feed Cutters, 3 sizes Tread & Sweep Powers,
Corn and Cob Mills, Ear Corn Crushers,
Potato Diggers, Farm Boilers, etc.

MODERN HERO.



All goods sent on 10 days' trial and fully warranted. Send for illustrated catalogue, giving full description. 20,000 of our Grinding Mills now in use.

WORKS, APPLETON, WIS. — 22 SOUTH CANAL STREET, CHICAGO, ILL.

THE WESTINGHOUSE

Grain Threshers, unequaled in capacity for separating and cleaning.

Combined Grain and Clover Threshers, fully equal to regular grain machines on grain, and a genuine **Clover Huller** in addition.

Two Speed Traction & Plain Engines, 6 to 15 Horse Power, positively the most desirable for Lightness, Economy, Power and Safety. Boiler has horizontal tubes, and is therefore free from the objectionable features of vertical boilers.

Horse Powers, both Lever and Endless Chain. All sizes. Send for Catalogue. Address,

THE WESTINGHOUSE CO.,
Schenectady, N. Y.

THE UNION HORSE-POWER

Has the Largest Track Wheels, DOUBLE GEARED, NO RODS, CHILLED BEARINGS, and LEVEL TREAD.

UNION Thresher Separator and Cleaner, Premium Farm Grist Mill, Feed Cutters, &c.
W. L. BOYER & BRO., PHILADELPHIA, PA.

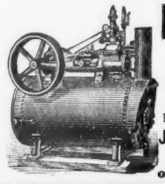
WHITMAN'S NEW PATENT REBOUND PLUNGER PERPETUAL

GUARANTEED SUPERIOR to any LEVER PRESS NOW MADE.

Received First Premium at N. Y. State Fair, in 1880, 1881, 1882, 1883 and 1885, including the Grand Gold Medal and two Silver Medals, over Dederick and others; also World's Fair at New Orleans, and California State Fair. The most rapid, powerful and durable press made; puts over ten tons in car; bale every three minutes; fully warranted and protected; three bales to any other press's two. Send for illustrated circulars. Also Horse Powers, Cider Mills, Corn Shellers, Feed Cutters, &c.

WHITMAN AGRIC'L CO., St. Louis, Mo.

FARM ENGINES



Upright and Horizontal, Stationary, Portable and Semi-Portable.
3 to 16 Horse Power.
Illustrated Pamphlet Free. Address
JAMES LEFFEL & CO.
SPRINGFIELD, OHIO,
or 110 Liberty St., New York

Heebner's Patent Level-Tread Horse-Powers

With Patent Speed Regulator.

Heebner's Improved Threshing Machine. *Fully warranted.* Send for Catalogue A, with valuable information sent FREE. Sole owners of *Level-tread*-patents. All others infringements. HEEBNER & SONS, Lansdale, Pa.

DUTTON GRINDER

Perfect Mowing
MACHINE KNIFE
GRINDER.
Weighs but 18 Lbs.

Can be carried into the field and attached to Mowing Machine Wheel. Send for Descriptive Catalogue. Agents wanted in every County.

HIGGANUM M'F'G CO., Higganum, Ct.
WAREHOUSE, 38 So. Market St., Boston.
SUCCESSORS TO
R. H. ALLEN CO., 189 & 191 Water St., N. Y.

HORSE POWERS.

LATEST IMPROVEMENT

Machines for SAWING WOOD with Circular and Cross-Cut Drag Saws. Also Machines for THRESHING and CLEANING Grain.

Acknowledged by all to be

THE BEST

considering

Easy Draft, Durability, Quantity & Quality of Work

48 page pamphlet Free. Address **A. W. GRAY'S SONS,**
PATENTEES AND SOLE MANUFACTURERS,
MIDDLETOWN SPRINGS, VERMONT.

50,000 IN USE WOOD'S FAMOUS CORN SHELLER

Will shell a Bushel of Corn in 4 MINUTES.
Agents Wanted.
Ask Your Merchant FOR IT.
Send for Circular and Price List No. 2.

SAMPLE SHELLER $3.00.
WARRANTED 5 YEARS.
Best Sheller in the World.

GARRY IRON & ROOFING CO.,
Sole Manufacturers and Owners, - CLEVELAND, OHIO.

WORK SHOPS

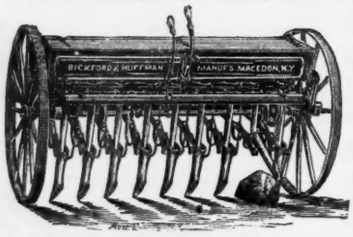
WITHOUT STEAM POWER
BY USING OUTFITS OF
BARNES' PAT. FOOT POWER

machinery can compete with steam power. **Sold on trial.** Metal and wood workers send for prices. Illustrated catalogues free.

W. F. & Jno. Barnes Co.,
Rockford, Ill.
Address, No. 65 Ruby St.

THE FARMERS' FAVORITE

GRAIN DRILLS.



THE GREATEST ON EARTH.

UNRIVALED IN FIELD WORK THE WORLD OVER.
UNEXCELLED IN MATERIAL, MANUFACTURE & FINISH.
Send for Circulars. Mention this paper.
BICKFORD & HUFFMAN, Macedon, N. Y.

BIRDSELL CLOVER HULLER

THE "NEW" CLOVER HULLER
DOES ITS WORK FASTER AND BETTER THAN ANY OTHER
OUR "NEW" RE-CLEANER
READY FOR MARKET.
CLEANS THE SEED
SEND FOR OUR CHALLENGE AND LATE CATALOGUE

GIBBS IMPERIAL HAND & SULKY PLOWS

in Steel chilled and combination.

STEEL AND WOOD BEAMS.
Manufactured by
BUCHER & GIBBS PLOW CO., CANTON, O.

$1000 REWARD

For any machine hulling and cleaning fit for market as much Clover Seed in ONE DAY as the VICTOR DOUBLE HULLER.
Illustrated circular mailed free.

THE VICTOR

has made $100 often in ONE DAY.

NEWARK MACHINE CO., Columbus, O. Ea. Br. House, Hagerstown, Md.

COOK FEED FOR YOUR STOCK

With the TRIUMPH STEAM GENERATOR and save ⅓ to ½ of your feed. Also ENGINES & BOILERS, GRINDING MILLS, FEED CUTTERS and CORN SHELLERS.
Send for Catalogue A and state what you want.
RICE & WHITACRE M'F'G CO.
42 & 44 W. Monroe St., Chicago.

THE LANE & BODLEY CO.,

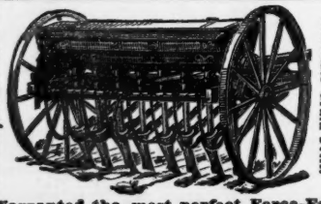
CINCINNATI.

MANUFACTURERS OF

SAW MILLS AND ENGINES

for all purposes. An experience of thirty years permits us to offer the best.
Good work at low prices. Send for circular.

The Pennsylvania Force-Feed Fertilizer Grain Drill.

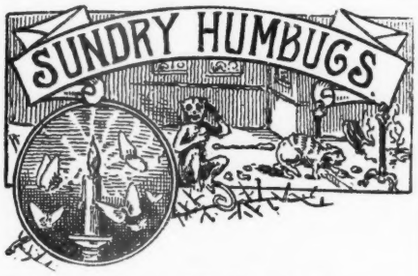


Warranted the most perfect Force-Feed Fertilizer Drill in existence. Send for circular, **A. B. FARQUHAR, York, Pa.**

A NEW INVENTION

NO BACKACHE.

7½ Cords of Beech have been sawed by one man in 9 hours. Hundreds have sawed 5 and 6 cords daily. *"Exactly"* what every Farmer and Wood Chopper wants. *First order* from your vicinity secures the *Agency.* Illustrated Catalogue *FREE.*
Address **FOLDING SAWING MACHINE CO.,**
303 S. Canal Street, Chicago, Ill.



Tooth-Pulling While the Patient Dreams!

One of the dental advertisements in our daily papers begins in this wise, "Only dreaming while the old snags are removed. Broken teeth repaired while waiting," etc., etc. Ordinarily, when one is in the hands of a tooth-doctor, there is not any tendency to dreaming, or, in fact, any fair opportunity to indulge in the luxury of a dream, even were the inclination never so strong. At least, this is our experience, and, we think, the accepted notion. But amid the other new coming luxuries of this inventive age, there are schemes to boom even tooth-pulling into a delight, and we find advertisements—which, doubtless, sufferers answer—displaying the bliss of the situation, with invitation to mankind to "come and buy," for now the torture will be inflicted, and the tortured be "only dreaming, while the old snags are removed." Picturesque and poetical this alliance between old teeth, with their anxious aches and pains, and the philosophy of dreams! Yet it cannot be that any reader of the *American Agriculturist* will seek to be imposed upon by this new and foolish device.

Town and Village Swindling.

The devious ways of swindlers are full of puzzling crooks and turns, now leading up to some individual, and, again, striking a municipality. Of this latter sort the name is legion, encompassing pretended water-works, gas-works, electric light plants, horse railroads, and every other scheme from which some man, or body of men, hopes to make money without work.

This is the way the work is done: A "raid" is put on foot by two or three men in New York, against some rural locality, where the people are willing to have "modern improvements" introduced; the schemers represent themselves as supported by large capital, and they obtain a franchise for the desired "improvement," which costs nothing, and yet, being legally granted, is available for some sum in cash, when hawked for sale in the city. The result to the town or village is an ill-constructed public work, whose cost for repairs will eat up all the substance of it, and this, disposed of by the "exploiters" to the enterprising village s at a good figure, "feathers the nest" of the former, and leaves the municipality—in debt. Hundreds of men in New York subsist upon their profits from enterprises of this character, and will continue to do so until rural municipal authorities shall stop making contracts for public works, except with persons whom they *know* to be honorable and substantial.

An Old Trick.

Every year about this time we have a fresh batch of complaints against well dressed, plausible, traveling swindlers, who secure the signatures of unsuspecting farmers on a slip of paper, ostensibly to secure the prompt payment, on delivery, for some horse-rake, pump, plow, or other article, offered for sale at a very low price, and on very easy terms, at some future time. On these slips of paper they have the signature written in such a position that they can easily fill out a promissory note for any amount, and the victimized farmers soon afterwards find these notes in circulation with their names attached. The last parties reported practicing this old trick were operating along the Hudson River. To all of our readers we have to give the oft repeated advice, "Give such rascals a wide berth, and never sign anything for a stranger."

"Book-Keeping in Three Weeks!"

"Book-keeping: adults qualified within three weeks. No business college nonsense, etc., etc. Address ——." Our attention is directed newly to the class of advertisements of which this is a sample: of character identical with that belonging to the "telegraph instruction" frauds, which, under pretense of benefiting, injure, because all business men accept as simple truth the worthlessness of this "hand-made education." Boys and girls may be misled by these advertisers, and, being misled, are still entitled to sympathy, but "book-keeping instruction" is offered to adults, and they—having any sense at all—*know* they can not become "qualified" in the difficult and exact science of book-keeping in three weeks, or in anywise, save by long and laborious study and service. Besides, the advertisement before us as we write, is strictly emphatic in declaring the fact that its perpetrator is entitled to no countenance or consideration whatever; "no business college nonsense," he says, and this in face of the thorough work performed, for example, by such institutions as Eastman's, whose system gives each student that which is the very nearest approach to actual experience in the real business of life. There is no method of becoming qualified as "book-keepers" or for any other station of responsibility in business, except by labor in actual service, or under the training of serious and sincere educational systems, which will not pretend to force growth or development, but will build up the man in every way, morally as well as mentally.

"National Lottery of Colonization."

Time out of mind, and times without number, we have urged the United States Government not to allow circulated through its mails, the papers of any lotteries, and, in the same breath, we have warned our readers against these tempting schemes. If we mistake not, there is an inhibition upon such matter in our mails, if it be of this country solely; why then shall the British government, in virtue of postal connections, use the mails for ends which are *unlawful* to our own people? One "S. E. Lefebvre" has sent a Canadian Lottery's circulars broadcast over the Republic, and one of these is forwarded us by Mr. W. H. Allen, of Monroe, Massachusetts, who had received it from Canada. We have looked into the scheme so far as possible, and find it an attempt by the Province of Quebec to entice colonization. The Province wants money: the Canadians haven't it to give, and so the Dominion's contract with the United States for mail exchanges is availed of, for drawing funds from our people. If Canada, or either Province of Canada, desires colonists, or money for colonization purposes, its efforts should be confined to its own people; the genius of our institutions is opposed to all lotteries, as also are the consciences of our people; and the authorities at Washington should interdict these uses of our mails by any foreign power, out of deference to these accepted truths. In sending us his circular, Mr. Allen has done well, and in his suggestion that "there is no way to prevent the circulation of these by mail, or Canada from harboring American boodlers and bank robbers," we must, perforce, concur, unless, as to lotteries, the Post-master General shall assert himself, and apply to foreigners the postal rules which govern us. Our thousands of subscribers in the Provinces will thank us for bringing the Provincial authority to book on this matter.

Bogus Pianos and Organs.

"Being about to make an extensive tour, a lady will sell magnificent rosewood cabinet Upright Piano, seven and a quarter octaves, overstrung, iron plate, used five months, warranted five years by maker, cost $800, for $200, including Stool and Cover. Call at private residence, No. — ——— street."

The above is a specimen of advertisements continually appearing in New York papers. Inquiry at the given number, which was a furniture salesroom in spite of its outward appearance of being a private house, brought to view a piano, not secondhand but new, brightly polished, and with fair but uneven tone, with poor quality of wire, uneven quality of felt in the hammers, bad spots in the sounding board, and cheap lumber throughout, being a fair sample of a legion of pianos made for sale and not for use. The term "secondhand" was evidently used as an excuse for the apparent cheapness of a supposed valuable piano. Ignorance of the location of the factory was claimed by the salesman. The factory was however discovered by proper inquiry. No sign graced the door, but up stairs two work rooms were found, and one workman putting together a duplicate of the instrument already seen. The proprietor was conveniently away. A little questioning, however, elicited from the workman that the instruments were sold only to the trade, and for $125; that the component parts were mostly bought in various places, ready made; the action in one place, the iron castings in another, the pegs, wire, etc., in another, and the frame in still another. The reader may form his own impression of the value of the maker's guarantee under such circumstances. Such instruments are specially deceptive, as they are seen and heard at their best when new, and may hold out in fair condition for six months or a year, but will afterwards rapidly deteriorate. These fraudulent pianos are pushed everywhere, but in the country they are the most successful, as they cannot be so readily compared with better.

In cabinet organs also the amount of fraud and trickery is surprising. The proportion of poor instruments is greater than in pianos, for the cash outlay being smaller, less care and scrutiny are usually employed in the selection. In the country, and to some extent in the city, the instrument swindle often takes the form of an oily-tongued canvasser who begs the privilege of leaving a piano or organ on approbation a few weeks or months. This looks plausible, and where an instrument is desired, the offer is frequently accepted. The instrument once within the door, the agent finds ways and means to make its stay permanent. The true inwardness of the instrument does not usually develop under six months, possibly one year. If otherwise, the agent argues away the dissatisfaction or juggles the refractory note. If these do not suffice, he charges the family with abuse of the instrument, and in extreme cases threatens a suit for damages. Under the most favorable circumstances, the customer finds that the payments already made will be lost if the instrument is taken away. Once fairly domiciled, the work of decay goes merrily forward. The piano tone becomes uneven, some notes thick and "tubby," others sharp and wiry, the action fails to repeat, and the piano will not stand in tune. In time the sounding board warps, or the iron plate cracks. The organ becomes wheezy; the keys persistently stick; the action warps, letting the wind into the wrong set of reeds; some reeds crack; and in both piano and organ the varnish cracks, letting out the moisture from the unseasoned wood. The guarantee of the maker when most needed proves to be worthless. It is a queer element of human nature on which the salesman largely depends, viz., the disposition to praise one's own property, and never to acknowledge one's self the victim of a swindle. Prevention is better than cure. Where the services of a disinterested expert are not available, a wide berth should be given to all instruments new or old that do not come from houses of established repute.

Cautionary.

"Throat and Lung Remedies."

As the autumn and winter of each successive year approach, we are besieged by letters from anxious subscribers afflicted with coughs and colds, asking about some remedy largely advertised, either in the public prints or by circular. One before us now states that after using a "trial bottle" some relief is experienced, and while their regular physician will not advise the continuance of its use, anxiety to obtain relief is so great that we are asked our opinion, and as to the standing of the party in New York who offers the "cure" for sale. We have followed these matters up repeatedly, and while, in many cases, there is no evidence of positive fraud about the office, laboratory or signs of the parties, and while an analysis of the "Combined Remedies" might disclose only such simple syrups and herbs as our grandmothers used, and as harmless—yet with the circulars before us and the letters from the afflicted, so anxious to be cured, and catching at any straw, we must join with the regular physician who advised our correspondent against their use. It is bad enough to pay from $3.00 to $10.00 for some harmless syrup and some well known low costing cough allayment. If the "combined remedies" do contain any active stimulating drugs used in the "trial bottles" to secure the sale of the larger ones, then the "remedy" is still more to be avoided. As these remedies have been advertised for the past quarter of a century under various names and seldom two successive years under the same name, it goes without saying that up to this time no positive cure for consumption has been found, and that the last one advertised is the one so long looked for, is out of the range of probability; and the safest way will be to continue under the care of a skillful regular physician until the fact becomes abundantly proven.

"Lakenwild, Washington Co., Me."

In response to Mr. J. P. Glass, Pickaway county, Ohio, wherein he inquires of this "Lakenwild" project, we can say, only, that "we do not know." Maine is a great and growing State, her own people are shrewd and "awful" calculating, every man and woman down there knows "jest how many peas there are in a pod," and——therefore, we think that this Lakenwild plantation, with its highly ornamental circular, the "slick" portrait thereon, and "testimonials," including the offer of lots at "ten dollars each, for a while," intending to hold their fellows "at one hundred dollars and upwards" by-and-by, is just a "leetle" too liberal. That the country is a good one for summer sports, we know well enough, but that it is a good policy for our readers to go into real estate operations up there, is doubtful. Yet each one should investigate, with all that the word implies, for himself, and not depend upon pretty handbills, poetical descriptions by professors, or personal reminiscences of "wild-roving half-brothers," of long dead or now living United States Senators, when seeking "a home for which to have a deed."

1888

BEGINS NOW.

All **New** Subscribers for 1888, whose subscriptions come to hand before **October 30,** will receive the ***American Agriculturist*** for November and December of this year without extra charge.

The above applies to **All** new subscribers, from whatever source received — including Premium Clubs.

Those too distant to receive this number before **October 30,** will be allowed 10 days after its reception in due course of mail, to take advantage of the above in presenting the paper to their friends.

Homes of Our Farmer Presidents.—Garfield.

Accompanying this issue is another of the Engravings of the Homes of our Farmer Presidents, which the publishers of the *American Agriculturist* take great pleasure in presenting to our subscribers. The accompanying description is by Major J. M. Bundy, author of the "Life of Garfield." When our representative, having charge of the matter, called upon Mrs. Garfield at Mentor, Ohio, and stated that we would be pleased to consult her wishes as to the writer of the article, she immediately named Major Bundy.

The next Engraving in the series will be General Grant's farm surroundings. These Engravings are furnished to all subscribers free of cost. When printed on heavy tinted paper, ten cents extra are required for mailing.

Our European Subscribers.

We are receiving many foreign inquiries, especially from Australia, New Zealand, New South Wales, and Tasmania, for best terms on one or more yearly subscriptions to the *American Agriculturist*. We offer the following table, *postage paid:*

	£. sh. d.	U. S. Currency.
Yearly Subscription Price,	0-6-10	$1.64
On two yearly subscriptions, up to five,	0-5- 0 each	$1.20 each.
On five and all over,	0-4- 9 each	$1.14 each.

Make remittance by Post Office Money Order, payable at New York General Post Office. To avoid delay and possible loss, enclose Money Order with your letter.

Wanted Immediately.

A Canvasser in every locality of the United States and Canada, to work from the first of October to the first of April, 1888, in procuring and forwarding subscriptions to the *American Agriculturist*. We offer most liberal inducements for both men and women, inducements which cannot fail to attract them, and will afford unusual opportunities for making money to all who may want to engage in the work. Full particulars forwarded on application to the Publishers of the *American Agriculturist*. Send immediately, giving name and address in full.

Our Free Offer Extended.

The American Agriculturist New Cyclopedia of Natural History.

In response to urgent requests to extend our offer made last month, see pages 400 and 401, September number, we will continue it for thirty days—that is:

We will present this invaluable volume, postpaid, to any person in the United States or British America, who sends us one new subscriber to the *American Agriculturist*, at the regular price of $1.50 per year, before October 31, 1887.

Furthermore, any person sending more than one new subscriber will be presented with one book for each subscriber.

And furthermore, where ten new subscribers are forwarded, the sender will receive an extra copy—that is eleven books; and, if he chooses, he can therefore present each new subscriber with a Cyclopedia, and have a free copy for himself.

In addition, every new subscriber sent in under this offer before October 31st, will receive the *American Agriculturist* for all of 1888, and be presented with with the remaining two numbers of this year FREE. Orders filled in succession as they are received.

All new subscribers for 1888, whose subscription is received before October 31st, will thus receive the *American Agriculturist* for the months of November and December, 1887, free.

Seeking Information.

Subscribers are invited to solicit information from us as they may, from time to time, desire and require it, on every-day topics and matters pertaining to the farm, garden, and household. We cannot, however, notice, either through the columns of the *American Agriculturist* or by letter direct, questions by those not subscribers. Two or three persons are now kept busily employed in answering the requests for information from our regular subscribers, who are all that we can attend to. In writing, sign your name in full, adding "a subscriber," and enclose stamp for reply.

P. S.—Anonymous letters never noticed.

Wait Before Making Purchases.

Our Annual Premium List, now in preparation, will contain an entirely new selection of premiums, embracing all the very latest styles and fashions. Every article has been selected with special reference to the wants and needs of our readers, and what is more, every one can be procured without money, and with very little labor in securing subscribers for the *American Agriculturist*. Wait therefore, before making your contemplated autumn and holiday purchases, until you have seen the *American Agriculturist's* new Premium List for 1887.

A Special Premium.

Any person sending us a club of fifty subscribers to the *American Agriculturist*, at $1.00 each, will be presented by us with a free scholarship in Eastman's splendid business College at Poughkeepsie, New York. Here is an opportunity which is very rarely presented. Any young man in the country who desires to secure a first-class business education (informing his friends what his desire is) undoubtedly can secure the necessary number of subscribers in two or three days' time.

Good Guns.

We have furnished many thousands of guns of various kinds to the subscribers and friends of the *American Agriculturist*, and of the large number of recipients, not more than half a dozen all told have complained that the guns were not as represented. Read elsewhere (page 448) descriptions of guns we now offer as premiums or for cash.

How It is Received.

Though only just offered, large numbers are sending for the AMERICAN AGRICULTURIST CYCLOPEDIA OF NATURAL HISTORY. The following responses indicate how the work is being received.

BAKER CO., PA., Sept. 8, 1887.
Received Cyclopedia all right. Am very well pleased with it, and very much obliged.
ALEX. GARROW.

CARROLL CO., N. H., Sept. 9, 1887.
Cyclopedia of Natural History received; I consider it a valuable work, well worth a place in the library of all. F. AVANS HALEY.

FRANKLIN CO., O., Sept. 9, 1887.
The Cyclopedia of Natural History is all you claim for it, and should be in demand both on the farm and in the city. S. MONYPENY.

KANE CO., ILL., Sept. 9, 1887.
A most excellent work for general reference, and valuable in every family. Your offer of the work as a premium is a remarkably liberal one.
S. W. DURANT, *Publisher Valley Chronicle.*

HAMPSHIRE CO., MASS., Sept. 8, 1887.
Have seen your Cyclopedia, and think you are making quite a present. Your magazine is worth double the money you ask for it to any one, and to the farmer it is invaluable. A. A. MANSUR.

SAGADAHOC CO., ME., Sept. 10, 1887.
A useful and instructive work, and one which should have a wide circulation at the liberal inducement for which you offer it.
G. F. ALEXANDER.

PHILADELPHIA, PA., Sept., 8th, 1887.
Your Cyclopedia of Natural History contains much useful information, without the technicalities generally used in such works. It is a valuable premium. RICE BROTHERS.

BERKS CO., PA., Sept. 10, 1887.
A very desirable addition to my library, and think farmers in particular will be pleased with it. I am quite sure the boys and girls will like it.
S. B. BEST, ED. *Home Monthly.*

COOK CO., ILL., Sept. 9, 1887.
Your Cyclopedia received. We are very well pleased with it, and think every one ought to take advantage of the offer, and obtain a copy. It is a book for everybody, young and old.
F. W. BRENCKLE.

WOODBURY CO., IOWA, Sept. 10, 1887.
A very complete work, well worth the whole of the subscription price of the *American Agriculturist*, which I consider to be the best publication of its kind in the country. J. N. PALMER.

MERRIMACK CO., N. H., Sept. 9, 1887.
Cyclopedia of Natural History received. Am more than pleased with it. Do not see how such a valuable premium can be offered for the price of the paper. CHAS. A. WILLIAMS.

SALEM CO., N. J., Sept. 9, 1887.
I received your Cyclopedia of Natural History, and am very well pleased with it. It is a book of which every person should possess a copy. Its remarkably low price should be the means of placing it in everybody's library. F. B. MORRISON.

LAPEER CO., MICH., Sept. 9, 1887.
The Cyclopedia of Natural History is received. Permit me to say that I regard it as a valuable compilation of facts and information, which, when seen by the intelligent farmer, would be regarded as indispensable. I do not see how you can offer such a work as a premium, for it is certainly worth the price of the entire combination.
FRED. HALL.

Our New Expert Photographic Outfit.

This proves to be a highly popular outfit, and we renew the offer made on page 280 of the June *American Agriculturist*, where full details are given.

CONTENTS, PART III., 1887.—July, Aug. & Sep.

A

Agriculture, A B C of...292, 328, 368
Agriculture in Colorado.....295
Agricultural Ant of Texas, The.296
Agricultural Soc., Arkansas Valley, 298.
Alkali Lands of the Southwest..336
American Pomological Society. 298
American Veterinary College...298
ANIMAL AILMENTS:
Choking Cattle, 359 — Colic in Horses, 379—Cows, Depraved Appetite in, 359—Cows Losing the Use of their Tails, 359—Cure for a Horse Carrying his Tongue Out, 339 — Diarrnœa in Calves, 339 — Horse, Lame, 299 — Horses, Uneven Teeth in, 339—Jaundice in Sheep, 299—Lampas, 359—Loss of Hair, 379—Mange on Calves, 339—Mare, Carrying her Tongue Out, 299—Obscure Lameness in Horse's Shoulder, 339 — Soreness of the Skin, 379—Sores on Jacks' Legs, 314—String Halt, 299—Swelling on Cow's Neck, 299—Tender Hoof, 339—Vermin on Dogs and Sheep, 299—Worms in Swine, 339.
Apiary, In the.....337
Apparatus for Lifting Heavy Weights, 334.
Apple Crop, Disposing of.....317
Arbor Day in Nebraska.....327
Arizona and Sahara.....298
Ashes and Brick Dust.....378
Ashes, Coal.....339
Ashes, Save the.....333

B

Bag-Holder, A Cheap.....334
Barn Door Fastener.....*..334
Beekeeping in Early Summer...287
Bee Notes for August.....327
Beef and Pork, Comparative Profit, 349.
Beef, Corned or Pickled.....370
Beetle, Strawberry, Patent Medicines, 313.
Beetle, the Buffalo Carpet....*..332
Begonia.....340
Bites and the Cure.....313
Bloodhound.....*..375
BOYS' AND GIRLS' DEPARTMENT—Aim to be Polite, 391—American Otter, 352—Bunny, A Close Call, *391—Deserts, American, *391—*Doctors' Talks, The*:—Ash Flowers, *312—A Shrub Bearing Flowers, *331—Can You Swim? 391—Elephant's Foot, *391—Elephant Plant, *351—Freak of an Orange, 391—Ivory Nuts, 351—Swimming, How to Learn, 351—How to Begin, 351 — When to Swim, 351 — The Stings of Bees, *312—Vegetable Ivory, 351—Where do Ivory Nuts Come From? 351 — Why do Bees and Wasps Sting? 312—Fishing and Catching Fish, *352—Learn to Reflect, 352—Mistakes, Profitable, 391—*Stories*:—Doctor Croak and His Student, *393—How Doris Spent the Fourth, 310—Her First Cruise, *350—The Vampire, 312.
Butter Record, Holstein Friesian, 299.

C

California, Lower.....314
Calves, Suggestions for Raising*342
Cattle, A New Food for.....299
Cattle, Guernsey, for the Dairy.*371
Clay Lumps, Mellowing.....313
Celery in Winter.....378
Cement Floors for Cattle.....313
Cement Facing for Stone Walls.338
Cherries, Dwarf.....299
China Tree, A White-Leaved....394
Churning by Windmill.....299
Cider Vinegar.....298
"Cinnamon Vine".....378
Clod-Crusher, Useful.....*..334
Clover Hay, Making.....304
Coffee, Culture of.....336
Concrete Walls.....299
Corn, Canning.....394
Corn, More Needed for Fodder.334
Cottage Costing $5,500, *343—Costing $3,000, *375—Suburban, Costing $2,500, *303.
Cotton Plant, History of.....330
Cotton Plant, Some Characteristics of the, 374.
Cow, Selecting a.....298
Cows, Breeding Dairy, 345—Neck, Lump on, 351—Cure for Self-Milking, *342.
Cream, How Much?.....299
Crops, Soiling and Soiling.....371
Cucumbers, Raising for Pickles.304

D

Dairying and Pork Raising.....338
Dakota Fair.....313
Dakota, Lands Being Taken Up.314
Deep or Shallow Setting.....338
Domestic Animals, Improvement in Our, 303.
Driving Well Patent.....313
Drouth, Combating.....*..372

E

Eggs, Preserving for Winter...343
Elm Beetle: Hardening Paint...313
Enemies in the Garden or Greenhouse, 299.
Ensilage, Cheapening.....331

F

Farm Gate, Good and Cheap.*..304
Farm Roller, A Good.....294
Farmers, Co-operation Among.336
Feeding, Profits of.....298
Feed Rack, Portable.....*..372
Fence, Barb Wire.....331
Fertilizers, Artificial, 328—Composition of Special, 314—Value of Commercial, 328.
Figs at the North.....299
Fire-Proof Artificial Stone.....304
Fish, Value of Common, 327—Fry, Malformation of, 367—Laws for Protection of, 378.
Flax, in Chili, Exhibition of Machinery for Preparing, 313.
Flies, Killing.....313
Florida, The Banana in, 344—Lemon and its Culture, 302—Lime and its Culture, 302.
Flower Garden and Lawn, July, 287—Aug., 327—Sept., 367.
Fly, Joint-Worm.....338
Fruit, Evaporated vs. Dried.....375
Fruit Ladder.....*..372
Fruit Region, A Remarkable.....299
Fruit, When to Pick.....328

G

Game, Large, in Wyoming Terr..336
Gardening, A Mistake in.....330
Gas Lime and Corn.....303.
Grain Bags, Washing and Marking, 372.
Grain House, Farm.....295
Grass, A good Western, 367—for Beaver Lands, 378—for Sandy Soil, 338—Johnson, Trouble with the, 394—Orchard, 338—Pasture for Texas, 338—Perennial Italian Rye, 333—Rescue and Japan Clover, 378—Seed, Sowing, 336.
Grasses, Ornamental—Bouquets.306
Grasses for South Carolina.....298
Grape Vines, Pinching in.....314
Gleaning Grain and Hay Fields..287
Greenhouse and Window Plants—July, 287; Aug., 327; Sept., 367.
Grub in Lima Beans.....338

H

Harness Oiling.....313
Hay as Nutritious as Grass.....375
Hay Caps, Provide.....296
Hedges, August Trimming of....330
Heifers, Breaking.....313
Hitching Posts.....*..382
Holstein-Friesians.....*..293
Holsteins at Dairy Fair.....298
Honey, High Flavored, but Cheap, 327.
Horse, How to Keep a Family, Part I, 331; Part II, 383.
Horses, American Style of, 300—Barefooted or Shod, 339—Cleveland Bay, * 373—Clydesdale, 345.
HOUSEHOLD, THE:
Apron for Clothes Pegs, * 309—Baskets, Paper, 388—Cabinet, Corner, 389—Chair, Beecher, Swinging, * 349—Chairs, Ornamented, * 349—Children, Bank Accounts, 388—Children, Bringing up Rationally, 388—Collar, Fancy Linen, * 389—Envelope Holder, * 389—Fan, Piano, * 309—Handkerchief Case, Pretty, 368—Home, Make the Farm Pleasant, 208 — Infant's Swing, Mexican, *308—Knitting: Edging, Wide; Edging, Narrow, 349—Lambrequin, Felt, *309—Late Summer Fashions, 388—Midsummer Fashions, 349—Painting and Varnishing, 309—Pocket, Convenient Paper, *349—Rat and Mice Destroyer, * 349—*Recipes:* Cake, Pineapple, 388—Clams with Cream, 309—Chickens fried with Cauliflower, 309—Chickens, Jellied, 389—Meringues, 388—Rhubarb, How to Prepare it, 309—Rhubarb Tart, 309—Spring Soup, 309—Summer Salad, 349—Tomato Omelet, 349—Whipped Cream, 388—Step Ladder, Portable, *308—Skillet Cover, Home-made, *308—Summer Fashions, 308—Table Cover, Felt, *318—Tidy, Handsome, 319—Tidy, Knitted, 389.
Houses, Plans for Cheap.....361
HUMBUGS, SUNDRY:
Aiding the Good Work, 359—A New Hand at the Bellows, 319—A Wonderful Plant, 359—Bramo Yan Again, 399—Beware of "Supply Companies," 319—Bunco Steerers Active, 359 — Business Opportunities, 339—Humbug, Transparent, 339—It is a Darling, 399—Lightning Self Music Teaching, 319—Look Out for Them, 399—Lottery Fraud, New, 359—Mines and Mines, 399—Miracles in Boston Town, 319—"One Royal Italian Barletta Bond," 399—Patent Medicines, or Specifics, Liable for their Failure, 399—Pinkerton's Detectives, 399—Poison in Flannel and Hose, 399—Puts and Calls, 399 — Rascals, Pleasure in Exposing, 359—Recipe, A Fortune for $5.00, 319—Sit Down, 399—Steer Clear of it, 399—Swindle, Very Mean, 359—Subscribers, One Word to, 399—"The German Government Lottery of the Free City of Hamburg," 319—The Old, Old Dodge, 359—The Old Story, 319.
Cautionary Signals: A Ten Dollar Philanthropist, $ 9—Assorted Ribbons, 361—"Crescent Art Co.," 360—"Electrobole, the Great Alvine," 359—"Land Boom," How it is Worked, 359—Silver Plated Ware, 320—Weal Pie Cases, 320—You can now Grasp a Fortune, 399.

I

Indian Diamond.....313
Insects, Keeping from Rose Bushes, 313.
Italian Dairy Show.....322
Ivies, Preparing for.....386

J

Jersey Cattle.....* .329

K

Keeping Bugs off Melons and Pumpkins, 313.
Kitchen and Market Garden—July, 286; Aug., 326; Sept., 366.

L

Lawns on Sloping Banks.....368
Lilacs, New and Old.....*..385
Lilies, How to Grow them, 370—The Day, Funkias, * 347—Water, *385
Lime Burning.....298
Live Stock Notes for July, 286; Aug., 326; Sept., 366.
Live Stock and Fruits in Eastern Oregon, 338.

M

Manure Pile.....373
Maple Gails.....319
Market.....313
Melon Pear.....379
Milk, Bitter and Stringy.....299
Milk, Preserving.....338
Missouri Fruit Prospects.....399
Missouri, South West.....299
Molasses, Vinegar.....338
Moles, Destroying.....298
Mower, Operating the.....304
Mulching and Cultivation.....307
"Museum Pest".....394

N

Nebraska Small Fruits.....299
North Carolina.....298
North Carolina, Stock Raising in 338
Novel Tail Holder.....*..304
Nurserymen's Convention.....339

O

Oleomargarine, French Law.....379
Oleomargarine, The Law of.....392
Onion Sets, Raising.....338
Orange Scale.....298
Orchard and Fruit Garden, July, 287; Aug., 326; Sept., 366.
Oregon, Shall I go to?.....382
Oxalis.....340
Oyster-Shell Bark Louse.....298

P

Pansies all Summer.....298
Parks, Private Game.....361
Partridges, Arabian.....369
Peach Crop Destroyed by Rose-bugs, 394.
Peach Leaves, Curled.....333
Peas and Fodder Corn.....294
"Peg Away Jobs" on the Farm.287
Peppermint Culture.....378
Peter Henderson.....*..360
Pigs, Coleshill.....*..297
Pines, Notes from.....*..340
Pitcher Plants, Our Native...*..291
Plant Protector, Inexpensive.*..290
Plants, Two Good House.....310
Poison Ivy, Exterminating.....314
Ponds for the Artificial Propagation of Trout, 287.
Ponies, Breeding Shetland for Profit, 300.
Potato and Tomato Blight and Rot, 379.
Potatoes, Harvesting and Storing Sweet, 344.
Potatoes, Sweet.....314
Poultry—Chickens for Broilers, 289—Colored Dorking Fowls, * 289—Does Poultry Pay? 288—Eggs, Keeping, 313-343—Eggs, Pickling, 313—Fowls for Food, 305—Geese, Toulouse, * 331—Langshan Fowls, * 369—Poultry Houses, Perches in, 335—Poultry, Market Breeds, 295—Poultry Notes, Seasonable, 297—Sitting Hens, To Move, 288—Summer Difficulties with Poultry, 288—Turkeys, Care of Young, 331—Turkeys, Raising, 384.
Primrose, Siebold's.....299

R

Rake as a Weeder.....304
Red Ants.....340
Red Top, Where to Raise.....288
Rodents, Nut Bait for Troublesome, 302.
Roots, Harvesting.....380
Rose Acacia, The.....306
Rose, The Many-flowered.....307
Roses, Garden Culture.....369
Roses, Budded, Grafted, on their own Roots, 341.
Rhubarb, Preventing from Going to Seed, 339.

S

Sage, The Spreading.....*..306
Salt and Water for Horses.....338
Saxifrages, The Garden.....*..307
Schools, Valuable.....321
Seed Testers—Testing Seed..*..294
Seeds, Killing Vitality of.....313
Seeds, Saving Farm and Garden.368
Sheep, Dairy, 375—Feed-Box and Rack for Sheep, * 294—Leicester, *341—Short Wooled, * 314—Sheep and Lambs for Market, 314—Weed out the Flock, 284.
Short-hand Teaching.....314
Shrub, An Old Reclaimed.....306
Shrubs, Variegated.....374
Slugs and Snails.....290
Soda, Nitrate of.....299
Soil, Pipe Clay.....338
Soiling, Advantages of.....335
Sparrows, No Mercy for.....361
Squabs, Marketing.....313
Stables, Room and Ventilation for 313
Strawberries next Spring.....306
Sumach Culture.....378
Sunflower, Cultivation of.....387
Sunstroke or Overheating, Avoid 289
Sunstroke, Preventing.....338
Swine of Sussex.....*..335
Swine, White of Yorkshire...*..380

T

Tile Draining on Farms.....380
Thinning of Fruits.....294
Thrips.....290
Tobacco, Planting and Cultivating, 296.
Tobacco, Topping and Harvesting, 340.

U

Umbrella Plant.....*..347

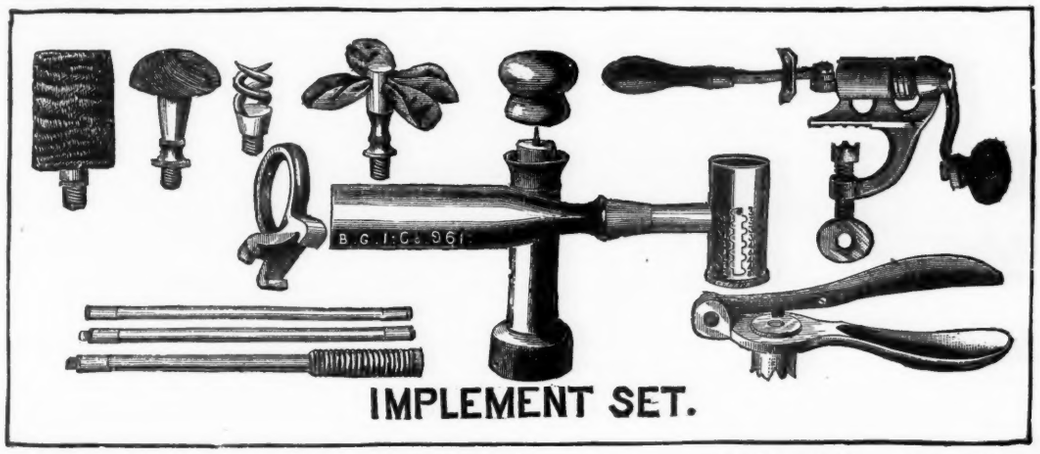
V

Vat for Heating Water.....*..304
Vermin, Poultry, Fighting.....341
Virginia and North Carolina, Welcome, 373.

W

Watermelons.....297
Water Supply, Increasing.....294
Web Worms, The Fall.....296
Weeds, Attend to the.....306
Weeds, Clearing Land of Perennial, 300.
Weevil, The New York.....379
Wheat, Its Growth and Products in the Mill.....373
Wheat, Plow Early for.....382
Window Boxes.....291
Wire Worms.....338
Wistaria multijuga.....314
Work the Crops.....286
Worms, Procession.....379

RELOADING TOOLS



IMPLEMENT SET.

FOR GUNS.

The above cut represents a **Complete Set of Reloading Tools,** comprising a jointed Cleaning Rod, with the cleaning attachments to screw on the end; a Closing Machine, to turn down the end of paper shells to hold wad in; a Loader, with nickled tube, for ramming down the charge; a Powder and Shot Measure combined, to guage the charge; a Ring Shell Extractor to pull out the shells if they should stick in the gun, and a Recapper for repriming the shells. This elegant and complete set supplied, post-paid, for $1.50; OR, when ordered with gun, $1.00; OR, supplied for **2** subscriptions at $1.50 each, post-paid. *See next page for valuable Guns.*

GUNNER'S OUTFIT,

Consisting of Twenty-five Brass Shells, Cartridge Loader, Belt with Shoulder Strap, Powder Measure, Cartridge Plunger, Cartridge Ring, and Cartridge Capper. We can supply this outfit, when ordered with gun, for $1.50; OR, for **2** subscriptions at $1.50 each; Or, without gun, for $2.00. Receiver to pay express charges.

Double-Barrel Breech-Loading Shot Guns

FOR EVERYBODY.

Highly Finished, Durable, Reliable and Accurate. Each Gun thoroughly examined.

Price, $20.

New Top Snap Action Gun.

25 SUBSCRIPTIONS TO THE **AMERICAN AGRICULTURIST, at $1.50 each, Will secure this Gun FREE.**

The above cut shows **Our New Top Snap Gun,** Extension Rib, Bar Locks, Pistol Grip, Patent Forend, Solid Plungers and Shell Rejecter. This gun has Laminated Steel Barrels; Solid Plungers, which penetrate the cap in cartridge, work in grooves, and do away with the springs, thus leaving nothing to get out of order; English Walnut Stock, with Pistol Grip, finely chequered, which makes the gun come up better and lessens the recoil, making it a much more preferable gun to handle than one without the Pistol Grip. This gun has a Rubber Butt Plate, which adds to its appearance; also, good Steel Bar Rebounding Locks, which come back to the half-cock notch after discharging the cartridge, and by moving the action opens the gun to reload, without first pulling back the locks to the half-cock notch; it is the best and most durable style of lock for guns that is made. The Extension Rib extends over the break and fits into the frame, thus making another fastening for the gun on top; it relieves the bolt fastening, and makes two fastenings instead of one. Two Guages, 10 and 12; length, 30 to 32 inches. 10-guage guns weigh from 8½ to 10 lbs.; 12-guage, from 7½ to 9 lbs. This elegant gun supplied for $20.00; OR, for **25** yearly subscriptions, at $1.50 each. Receiver to pay express charges.

Our Friends can secure this Side Action Double-Barrel Breech-Loader Gun without cost, by sending us 20 Subscriptions to the American Agriculturist, at $1.50 each.

Side Snap Action Double-Barrel Breech-Loader

Price, $15.00.

The Side Snap Action, Hand-Made Double Barrel Breech-Loader, offered by us this summer, is having immense sales, and giving thorough satisfaction. This gun has latest improvements. Patent Forend, by which the gun can readily be taken apart, doing away with the screws and pegs which formerly fastened the barrels to stock. Also, fine Walnut Stock, with ornamented Rubber Butt, and Pistol Grip finely chequered; Rebounding Locks, Shell Rejecter, Laminated Steel Barrels, and Solid Plungers. Of good material throughout. In 10 or 12 guages; 30 or 32 inches in length. 10-guage guns weigh from 8½ to 10 lbs.; 12-guage, 7½ to 9 lbs. We supply this fine gun for $15.00; OR, for **20** yearly subscriptions at $1.50 each. Receiver to pay express charges.—Large numbers of these guns have been sent out, and all proved satisfactory in every respect.

Lefaucheaux Lever Action Guns.

Price, $10 and $12.

The $10 style of this cheap but serviceable Gun will be given as a premium for 12, the $12 style for 15, subscriptions to the American Agriculturist, at $1.50 each.

Lefaucheaux Lever Action Guns.—Blued Barrel, $10.00; Laminated Steel Barrel, $12.00. Thousands of the above guns have been supplied as premiums and sold for the price by us in years past. This gun is strongly made, of good action, and thoroughly reliable and accurate. Made in two guages, 10 and 12; barrels, 28 to 32 inches in length; 10-guage guns weigh from 8 to 10 lbs.; 12-guage, from 7½ to 9 lbs. Blued Barrelled Gun sold for $10.00; OR, supplied for **12** yearly subscriptions at $1.50 each. Laminated Steel Barrels, price $12.00; OR, supplied for **15** subscriptions at $1.50 each. Receiver to pay express charges. This Gun has been a very popular premium, and is now used by many of our readers.

Sample Response.—**Kearney Co., Neb., August 30, 1887.—Dear Agriculturist: The $15 Gun that you sent me by express came all right; for which please accept my thanks. I would have acknowledged the receipt of the Gun sooner, but wanted to test it; then I have been sick. Well, out of twenty shots I killed eighteen chickens and rabbits: three shots were setting the rest wing and running shots, and I am satisfied two shells had no shot in them. I would rather have had a No. 10; I think it would have been better for geese; but am satisfied. Got a better Gun than I expected. Yours truly, JOHN F. YOUNG.**

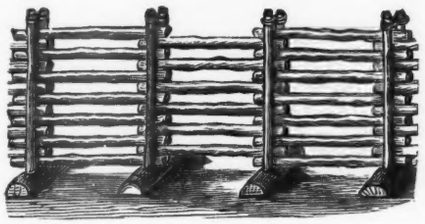
Write explicitly whether we shall ship by Freight or Express; ascertain charges at your nearest Express or Freight Office. Weight of Gun, securely packed, 20 lbs.

JUST PUBLISHED.

Fences, Gates

—AND—

BRIDGES.

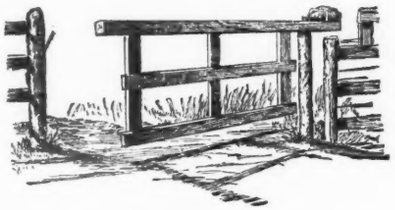


WITH A CHAPTER ON

FENCE LAW.

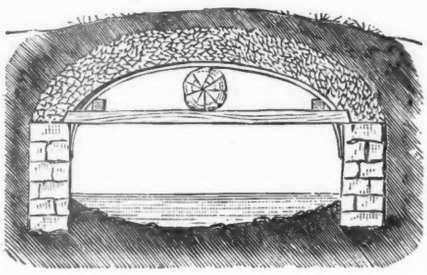
Nearly 300 Illustrations.

A much-needed and valuable work. The descriptions are abundantly illustrated. The book also contains a Synopsis of the Fence Laws of the different States.



CONTENTS.

CHAPTER I.—Rail and other Primitive Fences.
CHAPTER II.—Stone and Sod Fences.
CHAPTER III.—Board Fences.
CHAPTER IV.—Picket Fences.
CHAPTER V.—Barb-Wire Fences.
CHAPTER VI.—Fences of Barb Wire and Boards.
CHAPTER VII.—Hedges.
CHAPTER VIII.—Portable Fences and Hurdles.
CHAPTER IX.—Fences for Streams and Gullies.
CHAPTER X.—Making and Setting Posts.
CHAPTER XI.—Gates and Fastenings.
CHAPTER XII.—Wickets and Stiles.
CHAPTER XIII.—Fence Law.
CHAPTER XIV.—Country Bridges and Culverts.



CLOTH, 12mo. PRICE, POST-PAID, $1.00.

JUST PUBLISHED.

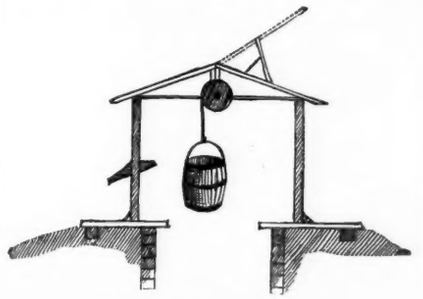
Farm Appliances.

DESCRIBING NUMEROUS

Useful and Labor-Saving Appliances,

Which will be Found of Great Value in Every Department of Farm Work.

This new volume contains valuable hints for every farmer, all practical and made plain by the large number of illustrations. Most of the appliances are of such simple construction, that any one, handy in the use of a few tools, can make them, and so find profitable employment on rainy days, or during the leisure time of winter.



CONTENTS.

CHAPTER I.—Racks, Mangers, Stanchions, Troughs.
CHAPTER II.—Vehicles, Rollers, Harrows and Markers.
CHAPTER III.—Small Tools and Appliances.
CHAPTER IV.—Appliances for the Barn, Pasture and Dairy.
CHAPTER V.—Wells, Pumps, Cisterns and Filters.
CHAPTER VI.—Appliances for Handling Hay and Corn Fodder.
CHAPTER VII.—Stump Pullers, Derricks and Slings.
CHAPTER VIII.—Preparing and Handling Fertilizers.
CHAPTER IX.—Appliances for the Garden and Orchard.
CHAPTER X.—Appliances for Slaughtering Hogs and Curing the Meat.

NEARLY 250 ILLUSTRATIONS.

CLOTH, 12mo. PRICE, POST-PAID, $1.00.

STANDARD RURAL BOOKS.

[Any of these books will be forwarded by mail, *post-paid*, on receipt of price. Address Publishers of *American Agriculturist*, 751 Broadway, New York.]

Farm and Garden.

Allen's (R. L. & L. F.) New American Farm Book	$2 50
American Farmer's Hand-Book	2 50
Asparagus Culture.....Flex. Cloth..	50
Bailey's The Book of Ensilage	1 00
Bamford's Silk Culture.....Paper..	30
Barry's Fruit Garden. New and Revised Edition	2 00
Bommer's Method of Making Manure	25
Brackett's Farm Talk.....paper, 50 cts.; cloth	75
Brill's Cauliflowers	20
Brill's Farm-Gardening and Seed-Growing	1 00
Broom-Corn and Brooms.....Paper..	50
Curtis on Wheat Culture.....Paper..	50
Emerson & Flint's Manual of Agriculture	1 50
Farm Appliances	1 00
Farm Conveniences	1 50
Farming for Boys	1 25
Farming for Profit	3 75
Fences, Gates and Bridges	1 00
Fitz's Sweet Potato Culture. New & Enlarged Edition.	60
Flax Culture. [Seven Prize Essays by practical growers.]	30
French's Farm Drainage	1 50
Fuller's Practical Forestry	1 50
Gregory on Cabbages	30
Gregory on Carrots, Mangold Wurtzels, etc.	30
Gregory on Fertilizers	40
Gregory on Onion Raising	30
Gregory on Squashes	30
Harlan's Farming with Green Manures	1 00
Harris' Gardening for Young and Old	1 25
Harris' Insects Injurious to Vegetation. Plain, $4.; Colored Engravings	6 50
Harris' Talks on Manures. New and Revised Edition..	1 75
Henderson's Garden and Farm Topics	1 50
Henderson's Gardening for Pleasure	1 50
Henderson's Gardening for Profit. **New and Enlarged Edition**	2 00
Henderson & Crozier's How the Farm Pays	2 50
Hop Culture. New and Revised Edition	30
Johnson's How Crops Feed	2 00
Johnson's How Crops Grow	2 00
Johnson's How to Plant.....Paper..	50
Jones' Peanut Plant.....Paper..	50
Johnston's Agricultural Chemistry	1 50
Lawn Planting.....Paper..	25
Leland's Farm Homes, In-Doors & Out-Doors	1 50
Long's Ornamental Gardening	2 00
Morton's Farmer's Calendar	5 00
Nicholson's Illustrated Dictionary of Gardening. Vols. I. II. and III, now ready. Each volume	5 00
Nichols' Chemistry of the Farm and Sea	1 25
Norton's Elements of Scientific Agriculture	75
Oemler's Truck-Farming at the South	1 50
Onions—How to Raise them Profitably	20
Our Farm of Four Acres.....Paper..	30
Pabor's Colorado as an Agricultural State	1 50
Pedder's Land Measurer for Farmers	60
Plant Life on the Farm	1 00
Quinn's Money in the Garden	1 50
Register of Rural Affairs, bound, 9 vols., each	1 50
Riley's Potato Pests.....Paper..	50
Robinson's Facts for Farmers	5 00
Roe's Play and Profit in my Garden	1 50
Roosevelt's Five Acres Too Much	1 50
Silos and Ensilage	50
Starr's Farm Echoes	1 00
Stewart's Irrigation for the Farm, Garden, and Orchard	1 50
Ten Acres Enough	1 00
The Illustrated Dictionary of Gardening. V's. I. & II. each	5 00
The Soil of the Farm	1 00
Thomas's Farm Implements and Machinery	1 50
Tim Bunker Papers; or, Yankee Farming	1 50
Tobacco Culture. By fourteen experienced cultivators	25
Treat's Injurious Insects of the Farm and Garden	2 00
Villes' Artificial Manures	6 00
Villes' High Farming without Manures	25
Villes' School of Chemical Manures	1 25
Waring's Book of the Farm	2 00
Waring's Draining for Profit and Health	1 50
Waring's Elements of Agriculture	1 00
Waring's Farmers' Vacation	3 00
Waring's Sanitary Drainage of Houses and Towns	2 00
Waring's Sanitary Condition in City and Country Dwellings	50
Warington's Chemistry of the Farm	1 00
White's Gardening for the South	2 00

Fruits and Flowers.

American Rose Culturist	30
American Weeds and Useful Plants	1 75
Bailey's Field Notes on Apple Culture	75
Black's Cultivation of the Peach and Pear	1 50
Chorlton's Grape-Grower's Guide	75
Collier's Sorghum, its Culture and Manufacture	3 00
Common Sea Weeds.....Boards..	50
Downing's Fruits and Fruit Trees of America. New ed.	5 00
Elliott's Hand Book for Fruit Growers....pa., 60c.; clo.	1 00
Every Woman her own Flower Gardener	1 00
Fern Book for Everybody	50
Fuller's Grape Culturist	1 50
Fuller's Illustrated Strawberry Culturist. New	25
Fuller's Small Fruit Culturist. New Edition	1 50
Fulton's Peach Culture. New and revised edition	1 50
Heinrich's Window Flower Garden	75
Henderson's Hand Book of Plants	3 00
Henderson's Practical Floriculture	1 50
Hibbard's Amateur's Flower Garden	2 50
Hibbard's Amateur's Greenhouse and Conservatory	2 50
Hibbard's Amateur's Rose Book	2 50
Hoopes' Book of Evergreens	3 00
Husmann's American Grape Growing & Wine Making	1 50
Johnson's Winter Greeneries at Home	1 00
Moore's Orange Culture	1 00
My Vineyard at Lakeview	1 25
Origin of Cultivated Plants	1 75
Parsons on the Rose	1 50
Quinn's Pear Culture for Profit	1 00
Rivers's Miniature Fruit Garden	1 00
Rixford's Wine Press and Cellar	1 50
Robinson's Ferns in their Homes and Ours	1 50
Roe's Success with Small Fruits	2 50
Sheehan's Your Plants.....Paper.	40
Saunders' Insects Injurious to Fruits	3 00
Stewart's Sorghum and its Products	1 50
Thomas's American Fruit Culturist. New Ed.	2 00
Vick's Flower and Vegetable Garden	1 00
Warder's Hedges and Evergreens	1 50
Webb's Cape Cod Cranberries.....Paper..	40
White's Cranberry Culture	1 25
Williams' Orchid Grower's Manual	6 50
Wood's Modern Window Gardening	1 25

O. JUDD CO., Publishers and Importers of all Works Pertaining to Rural Life, **DAVID W. JUDD, Pres't**

751 BROADWAY, NEW YORK.

Keeping Cions.—Mr. S. Cook, Franklin county, Massachusetts, asks how he can preserve cions in a good condition for grafting as late as the first of June. We should cut the cions as usual, and pack in a box with sawdust or moss, keep in the cellar during the winter, and, when warm weather approaches, place the box in the icehouse, but not in contact with the ice. The contents must be kept dry as well as cool.

Grass for Name.—Mr. C. F. Barnes, Brown county, Nebraska. The grass you send is the Tall Panic grass, *Panicum virgatum*. It is a tall, showy species, and often cultivated as an ornamental grass. If cut while young, it makes fair hay, but with age it gets very hard. In many localities it forms a large share of the "prairie hay."

Neighbors Wanted.—Mr. H. H. Twinning, Cleburn county, Arkansas, writes us of abundant crops this year, and speaks of the lands of the county as timbered with pine, oak, hickory, sycamore, walnut, etc. The government gives one hundred and sixty acres to settlers for twelve dollars, and sells any number of acres at fifty-six cents per acre. Improved farms can be purchased at from one and a half to eight dollars per acre. County healthy, with splendid water, and numerous mineral springs. Lumber five to ten dollars per thousand. He states that five hundred dollars will give a family a good start; some have come with one hundred dollars, and are now in good homes, and doing well. All kinds of grain, fruit and vegetables grow well, and stock raising is profitable.

Rapid Development of North Carolina.—We were much pleased with a visit from Col. John T. Patrick, State Commissioner of Immigration for North Carolina, who was in New York, arranging for a Branch to his bureau. He reports the outlook for increasing prosperity as never better. Crops are abundant. The planters are hopeful; and the coming State Fair, to be held at Raleigh, promises to be the best attended, and making the finest display of any ever held. The Cattle Clubs in Raleigh, Henderson and Asheville, have created a lively interest in blooded stock, and the Grape Show at Raleigh, early in July, gave evidence of the peculiar adaptability of the climate and soil of the State to the culture of the grape, and the production of wine. One exhibitor displayed one hundred and twenty-five varieties of the grape. The State appropriates $21,000 annually for the support of the Agricultural and Immigration Departments, including an experimental farm. Railroads are being projected, and many are now building, which open up much new country, and towns are growing up by reason of the facilities thus afforded. Along the lines of these new roads, the depot, possibly in the woods, is soon surrounded by a growing town. The property in the vicinity is made available for small farms, which sell to actual settlers at from five to twenty dollars per acre, and from their position they will naturally increase in value. Commissioner Patrick is an earnest worker, with entire faith in the work he has in hand, and that soon the attractions of North Carolina in climate, soil, and accessability will draw to her such an immigration as will develop her wealth, and build up her waste places. He acknowledges the value of the *American Agriculturist* as an advertising medium, when he says that he has received at least twenty-five per cent. more benefit from our pages than any other medium.

Business Department.

The Challenge Windmill.—In answer to inquiries we have to state we hope soon (probably next month) to present a fine illustration of this splendid mill which, together with other valuable farm implements, are manufactured by the Challenge Windmill and Feedmill Company, of Batavia, Illinois.

Ensilage and Feed Cutters.—The popularity of silos has made a great demand for ensilage cutters. These, also feed cutters, and other implements of decided value to farmers, which are handsomely illustrated by the manufacturers, [viz., the Silver & Deming M'f'g. Co..] Salem, Ohio, in a very attractive catalogue, which is forwarded on application.

Corn Shellers.—We learn from the manufacturers that over fifty thousand of Wood's famous corn shellers are now in use. They likewise state that sample machines are furnished for $3.00. Circulars are furnished on application to these manufacturers, that is, the Garry Iron Roofing Company, Cleveland, Ohio.

Plant Bed Cloth.—In the very favorable notice which we gave in the August number of the *American Agriculturist* of Plant Bed Cloth, we should have stated that it is manufactured by the U. S. Water Proofing Fiber Company, 56 South street, New York. It cannot only be used as a substitute for glass, but it is invaluable in a variety of ways. We have no hesitation in warmly recommending this Plant Bed Cloth to our subscribers, indeed they all of them should use it.

Good Drain Tiles.—We have received specimens of round tile manufactured by Jackson Brothers, Albany, N. Y. These tiles appear to be perfect in every detail. They are very strong and uniform in thickness and shape, qualities upon which success in draining largely depends. We are informed that the demand for these tile is increasing so rapidly that the proprietors of the works have been obliged to purchase two additional large steam machines, and are erecting another large kiln and drying building.

MISCELLANEOUS ADVERTISING.

Mention this periodical in writing to advertisers.

The **only** machine that received an award on both Horse-power and Thresher and Cleaner, at the Centennial Exhibition; was awarded the two last **Gold Medals** given by the New York State Agricultural Society on Horse-powers and Threshers; and is the **only** Thresher selected from the vast number built in the United States, for illustration and description in "Appleton's Cyclopedia of Applied Mechanics," recently published, thus adopting it as the **standard** machine of this country. Catalogue sent free.
Address, **MINARD HARDER**, Cobleskill, Schoharie Co., N. Y.

The New Perfected Runabout

The Original, and Father of all Runabouts.

PATENTED, JANUARY 16, 1883.

PATENTED, JANUARY 12, 1886.

For four passengers. The best general Business Wagon now in use. Weighs 300 lbs.; Capacity 800 lbs.; hangs very low; **rides** as **easy** as a **buggy**, and can be used for family or business purposes. Over 4,000 now in use, and giving the best satisfaction. **Guaranteed** to be **first-class** in every respect. Prices and Catalogue free to those who mention this paper. **H. A. MOYER Syracuse, N. Y.**

Pennsylvania Agricultural Works, York, Pa.

Address **A. B. FARQUHAR, York, Pa.**

FREE. Full particulars of our very latest; saleable, profitable and seasonable. Agents wanted. Address PUSHER, Box M, Station D, New York.

GAME OF CHECKERS, Game of Nine Penny Morris, Game of Fox and Geese, The Star Puzzle, The Great Triple Prize Puzzle, and Sample Book of Late Style Visiting Cards. All for only a 2-cent stamp. CAPITAL CARD CO., Columbus, O.

TRAVEL VIA

Burlington Route
C.B.&Q.R.R

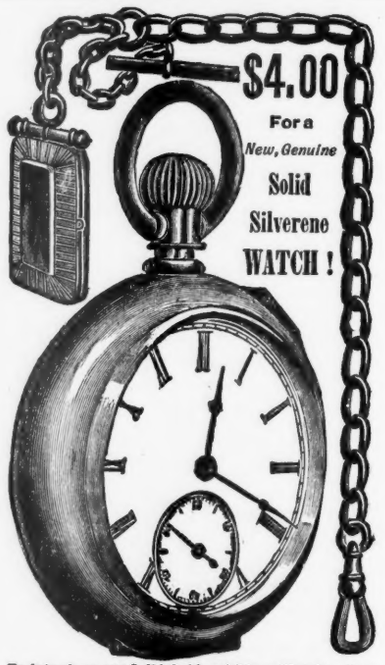
Through Trains with Dining Cars, Pullman Palace Sleeping Cars, Modern Coaches. Sure connections in Union Depots at its terminal points, with trains from and to the East, West, North and South. Cheapest, Best and Quickest Route from Chicago, Peoria or St. Louis to

DENVER, SAN FRANCISCO, OMAHA, KANSAS CITY, CITY OF MEXICO, ST. PAUL, MINNEAPOLIS, PORTLAND, ORE. ST. JOSEPH, ATCHISON.

For Tickets, Rates, Maps, &c., apply to Ticket Agents of connecting lines, or address

T. J. POTTER, 1st V. P. — *H. B. STONE, G. M.* — *PAUL MORTON, G. P. & T. A.*

For handsome Illustrated Burlington Route Guide Book send 4c. postage to the G. P. & T. A., Chicago, Ill.



To introduce our Solid Gold and Silver Watches, Jewelery, &c., and to show new customers that we are the Cheapest House in the West, we make this special offer for 90 days only. Our Silverene Watch comes in 3 oz., open face, finely finished, smooth cases, which look and wear like solid silver with an extra Jeweled expansion balance lever imitation Elgin movement. Satisfaction guaranteed or money refunded.

NOTICE:—That all may see and examine this watch before paying for same, we will send it C. O. D., subject to full examination if 50 cents is sent in advance as a guarantee of good faith, $3.50 to be paid at express office, or if $4.00 full amount is sent with order we will GIVE FREE a Fine, Gold Plate Chain and Charm.

W. HILL & CO., Wholesale Jewelers, 100 W. Madison Street, Chicago.
Mammoth Catalogue Free.

$250 EVERY MONTH. 1,000 LIVE AGENTS WANTED at once. Our Agent's Outfit a beautiful **SATIN-LINED CASKET OF SILVERWARE**, sent free. Write for it. WALLINGFORD SILVER CO., Wallingford, Conn.

18k SOLID ROLLED GOLD RINGS! To introduce our fine **Jewelry** to **New Customers**, we will send the following Rings at the special prices, quoted, which are about one-fourth the regular price charged in jewelry stores.

CHASED BAND RING. Sample, by mail, **30c.**
POPULAR WEDDING RING. Sample, by mail, **20c.**
CHASED RING. Sample, by mail, **25c.**
HEAVY WEDDING RING. Sample, by mail, **35c.**

We warrant each and all of the above Rings to be *18k Solid Rolled Gold*. With each Ring we send our Illustrated Catalogue of Watches and Jewelry. We give grandeur value for less money than any other firm in America. Address **W. Hill & Co., Wholesale Jewelers, 100 W. Madison St., Chicago.**

GRAPE VINES

All old and new varieties. **GRAPES. Extra Quality.** Warranted true. Also other **SMALL FRUITS.** Cheap by mail. Low rates to dealers. Illustrated Catalogue **FREE!**

Headquarters and lowest rates for **EMPIRE STATE & NIAGARA**

T. S. HUBBARD Co. FREDONIA, N. Y.

MISCELLANEOUS ADVERTISING.

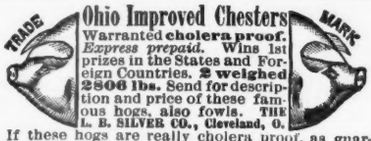
University of the State of New York.

American Veterinary College.

139 and 141 West 54th St., NEW YORK CITY.

The only school in the STATE which has the right to grant the degree of Doctor of Veterinary Surgery (D.V.S.)

The regular course of Lectures commences in Oct. each year. Circular and information can be had on application to **Dr. A. LIAUTARD, V. S., Dean of the Faculty.**



Ohio Improved Chesters Warranted **cholera proof.** *Express prepaid.* Wins 1st prizes in the States and Foreign Countries. **2 weighed 2806 lbs.** Send for description and price of these famous hogs, also fowls. THE L. B. SILVER CO., **Cleveland, O.**

If these hogs are really cholera proof, as guaranteed, have we not the solution to the problem, "How to banish hog cholera?" Write for particulars, and investigate. Mention this paper.

BERKSHIRES. We have now some sixty young PIGS ready for immediate shipment, two to four months old, which we offer at much lower prices than ever before. Also, a few sows in farrow, and boars fit for service. These pigs are fully pedigreed, and entitled to registry. Satisfaction and safe arrival guaranteed. Write at once for prices.

W. ATLEE BURPEE & CO., Philadelphia, Pa.

POULTRY WORLD.

A monthly magazine, the oldest, largest, and best periodical devoted entirely to poultry ever published. Splendidly illustrated. $1.25 per year. Also the *American Poultry Yard*, a weekly illustrated paper devoted entirely to poultry, $1.50 per year. Both papers for $2.00. A sample copy of both mailed on receipt of 8 cents in postage stamps.

Address H. H. STODDARD, HARTFORD, CT.

THE BEST CATTLE FASTENING!

SMITH'S

SELF-ADJUSTING SWING STANCHION!

THE only Practical Swing Stanchion Invented. Thousands in use. Illustrated circular free. Address,

F. G. PARSONS & CO., Addison, Steuben Co., N. Y.

Newton's improved **COW TIE** thousands in use. Pushes them back when standing, draws them forward when lying down, and keeps them clean. Circular free, if you mention this paper. E. C. NEWTON, Batavia, Ill.

GUERNSEY BULL CALVES, FOR SALE Cheap. Thoroughbred Registered Animals, the get of "Fancy's Lad, 651," 2nd Prize, N. Y. Dairy Show. Prices, $25 upwards. Apply to CHARLES B. WOOD, 621 Sixth Ave., New York City.

FOR SALE.—Pure bred B. Leghorns, Houdans, P. Rocks, Wyandottes, W. C. B. Polish. Also Eggs. Send stamp for prices. STEPHEN GOODRICH, Owego, Tioga Co., N. Y.

BONE MEAL for Poultry, Granulated Bone and Crushed Oyster Shells. Send for Price List. **YORK CHEMICAL WORKS, York, Pa.**

BROWN LEGHORNS, TRIO $5. 1 MALE 6 FEMALES, $10. Few chicks of P. Rocks, W. Leghorns and Wyandottes. Eggs of 10 varieties in spring of '88. Write for Circular. HOMER H. HEWITT, Williamsburg, Blair Co., Pa.

Cotswold Sheep

Ewes and Rams for sale at very low prices.

JOSEPH HARRIS SEED CO.,

Moreton Farm, Rochester, N. Y.

MALE AND FEMALE AGENTS are reaping a grand success with our new work. Circulars FREE by mail. G. C. RENWEE, 348 W. 48th St., N. Y.

☞ **FRIENDS!** If you are in any way interested in

BEES OR HONEY,

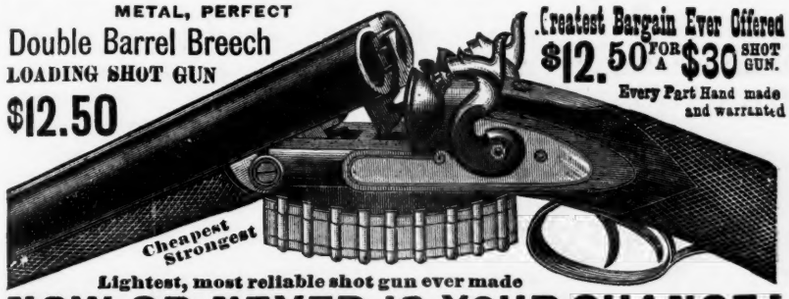
We will with pleasure send you a sample copy of our **SEMI-MONTHLY GLEANINGS IN BEE CULTURE,** with a descriptive price-list of the latest improvements in **Hives, Honey Extractors, Comb Foundation, Section Honey Boxes,** all books and journals, and everything pertaining to Bee Culture. *Nothing Patented.* Simply send your address on a postal card, *written plainly*, to **A. I. ROOT, Medina, Ohio.**

The "WOOLWICH"

METAL, PERFECT

Double Barrel Breech LOADING SHOT GUN

$12.50



Greatest Bargain Ever Offered $12.50 FOR A $30 SHOT GUN.

Every Part Hand made and warranted

Lightest, most reliable shot gun ever made

NOW OR NEVER IS YOUR CHANCE!

to get the best handmade, reliable shooting gun ever manufactured.

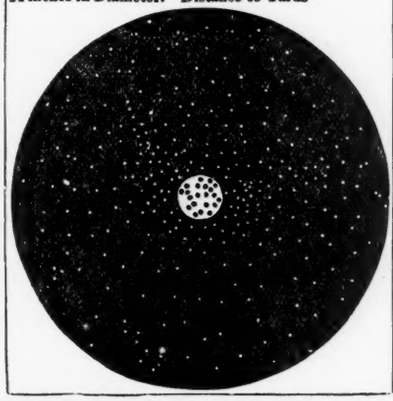
In the great gun factories of the world continual experiments are made to obtain the greatest strength with other needed qualities in **gun metal.** After innumerable trials they at length hit upon the kind of metal used in this gun, hence it is named the **"WOOLWICH,"** in honor of the Woolwich Infant, the most powerful Rifled cannon in existance. But not only is the metal **the best in the world,** but it is made by the most skilful artizans to be found in any gunsmith's shops anywhere. It is

The Grandest Triumph of Intelligence and Practice.

It is made for **service,** not **show,** although very handsome. No other breech-loader begins to have anything like the same **powerful action.** It is 8 centre fire, 10 or 12 bore, **Steel Barrels** finely bored. **Has very** easy working Steel Lock, blued; an **automatic shell ejector** suits either paper or brass shells handsome case hardened mountings. Barrels 28, 30 and 32 inches.

It Shoots Perfectly at 80 Yards and Will Kill at 150 Yards.

This Illustrates a Target with both Barrels. Target 24 inches in Diameter. Distance 65 Yards.



It is one of the strongest arms ever made **weighs from 7½ to 8½ pounds.** It has all the best qualities found in a $50 Shot Gun. The instant your eye spots this gun you will admire it and the first trial will convince you that you never took sight over a better or truer piece. We intend to be permanently engaged in the sale of the **WOOLWICH** Gun and for this reason we put it, **for the present,** at so low a figure, as we are satisfied that every Hunter and Sportsman will concede it to be the best shooting gun furnished at any price. So satisfied are we of the great merits of this gun that we will send C. O. D. on receipt of **$3.00,** subject to examination. Balance of bill to be paid at express office. As soon as enough of these guns are sold at **$12.50** to make them well known to the shooting classes we shall put the price up to **$25.00** knowing they will readily sell at that wherever known. **Now is the time to be sure of getting this excellent Gun at $12.50.** A good gun like a good watch is always valuable and will often sell for more than twice its cost. To any one sending $12.50 at once, full amount of cash with order

WE WILL GIVE FREE A SPORTSMAN'S BELT of fine water-proof canvas and 25 Shells extra.

Our patented solid brass shells, which prevent charges and wads from falling out, furnished at **60** cents a Dozen, **$4** a Hundred. Paper Shells **75** cents per Hundred, $2.00 will buy full set reloading tools,

IF YOU WANT A GOOD SHOT GUN AT A MODERATE PRICE BUY THIS.

Send money by Post Office Order or registered letter.

World M'f'g Co. 122 Nassau St., New York

GUNS

Our $15 Shot Gun now $10.

"$15 *Breechloader*" $9.50

All kinds Guns guaranteed lower than elsewhere. Send stamp for illustrated catalogue. **POWELL & CLEMENT, 180 Main St., Cincinnati, Ohio.**

AGENTS LOOK HERE

and **farmers** with no experience make **$2.50 an hour** during spare time. J. V. Kenyon, Glens Falls, N. Y., made **$18 one day, $76.50 one week.** So can you. **Proofs and catalogue free.**

J. E. SHEPARD & Co., Cincinnati, O.

WINCHESTER'S

HYPOPHOSPHITE OF LIME AND SODA is an excellent preparation for **Consumptives,** for **Coughs,** for **Weak Lungs, Throat Diseases, Loss of Flesh, Poor Appetite,** and for every form of **General Debility.** ☞ BE SURE AND GET WINCHESTER'S PREPARATION. **$1** and **$2** per Bottle. Sold by Druggists.

WINCHESTER & CO., Chemists, 162 William St., New York.

A book devoted entirely to PLYMOUTH ROCK fowls, also a separate book on WHITE LEGHORNS, another on WYANDOTTES, a book on curing POULTRY DISEASES, and another entitled HOW TO FEED FOWLS. Either of the above mailed for 25 cts., or all five for $1.00. Address the author,

H. H. STODDARD, Hartford, Ct.

BOOK OF BEAUTIFUL SAMPLE CARDS, 41 tricks in Magic, 800 Autograph Album Verses, 24 Amusing Games, 43 Ways to Make Money. All for a two cent stamp. EAGLE CARD WORKS, CADIZ, OHIO.

VALUABLE PATENT FOR SALE. FOR particulars write to the ADAMSON CO. (Agents for Selling Patents), Muncie, Indiana.

FARMERS' SONS AND DAUGHTERS can employ their leisure hours or devote their entire time, and earn from $100 to $500 during the fall and winter months, without leaving home. Send for Prospectus, mailed FREE. Address S. M. G., care "American Agriculturist."

SPIRIT OF THE TIMES

The American Gentleman's Newspaper.

The Recognized Turf and Trotting Authority of America.

Its Special Departments, Edited by Experts, comprise:

Racing, Rowing, Drama, Billiards, Trotting, Veterinary, Yachting, Football, Athletics, Stock-Raising.

It has been the mission of the SPIRIT for the last fifty-four years to furnish true information in current sporting events, and give sound and wholesome views on questions of legitimate sport in a liberal and unprejudiced spirit. This policy has placed its affairs in a condition of matchless prosperity, and with its immense circulation and influence, it has also become one of **the best advertising mediums in the world.**

Every number of the paper contains more printed matter than any magazine or other periodical published in the United States.

Subscription, $5 a Year.

E. A. BUCK, **Editor and Publisher,**

101 CHAMBERS STREET, New York City.

ONE PACK May I C U Home Cards, One Pack Escort Cards, One Pack Flirtation Cards, One Pack Hold-to-the-Light Cards, The Mystic Oracle, with which you can tell any person's age; and large sample book of Hidden Name Cards. All for only a 2-cent stamp. Banner Card Co., Cadiz, O.

SALESMEN.—Capable, pushing salesmen throughout the United States. Steady permanent business and sure pay. Address "FARMER," care O. Judd Co., 751 Broadway, New York.

LAND, HOMES, ETC.

Minnesota and Northwestern R. R.

Between Chicago, St. Paul and Minneapolis and between Chicago, Dubuque and Des Moines, Iowa.
Two Limited Trains each way Daily.

FOR SALE TO CLOSE AN ESTATE. 300 Acres of Land, well fenced and plenty of water, and in a high state of cultivation. This farm is beautifully located on Choptank River, upon which two lines of boats make daily trips to and from Baltimore. The buildings consist of a three-story brick mansion, overseer's house, two tenant houses, and upwards of twenty other buildings. Fruits of all kinds in abundance. In fact, one of the most delightful southern homes in the South. Four and half miles from County Seat. For particulars, address
JNO. P. STELLE, Executor, Easton, Md.

FARMS. Best of Climates and Soil. Good Market. No Cyclones; no Floods; no Blizzards; no Malaria. 5 to 100 Acres, $1,000 to $3,000. Easy terms. Fruit, Poultry, Milk, Grain, Schools, Society, Roads. Prosperous business place. Circulars. C. K. LANDIS, Vineland, N. J.

100 FARMS, NORTHERN COMMUNITY, 15 miles from Washington, D. C.
O. E. HINE, Vienna, Fairfax Co., Va.

PUBLIC SALE OF "SPRING PARK," Alexandria, Va. Under authority of a decree of Court, the subscribers will offer at Public Sale, on Saturday, Sept. 24, 1887, the valuable farm known as "Spring Park," containing about 80 acres of land, well watered, with Brick Dwelling House, and excellent out-buildings. It is situated about a half mile from railroad depot, and is especially desirable for farming or trucking purposes. For particulars and terms of sale, apply to S. FERGUSON BEACH, or JOHN M. JOHNSON, Special Commissioners, Alexandria, Va.

FARMS FOR SALE IN SUSSEX CO., DEL. The peach belt of the Del. and Md. Peninsula. Address L. T. SAULSBURG & CO., Georgetown, Del.

FOR SALE 300 CHEAP FARMS IN West Va. Circulars giving Description, Price, etc., Free.
J. H. BRISTOR, Martinsburg, West Va.

MISCELLANEOUS ADVERTISING.

Asparagus Roots

For prices write to the
JOSEPH HARRIS SEED CO.,
Moreton Farm, Rochester, N. Y.

JOHN P. BROWN, Rising Sun, Ind., **Brown's Fence Machine.**
See Illustration, June number, page 272.

CANVASSERS.—A few pushing men in every county in the United States. Rare chance for rapid advancement and permanent engagements to those rendering intelligent services. HURLEY, Box M, Station D, New York.

WANTED—AGENTS to sell **PRATT'S PATENT BUTTON FASTENER.** Address PRATT MANUFACTURING CO., Boston, Mass.

AGENTS WANTED. $1 an hour, 50 new articles. Catalogue and sample free. C. E. MARSHALL, Lockport, N. Y.

CUT THIS OUT and return to me with 10 cents silver, and you will get by mail a package of goods that will bring you in more money in one month than anything else in America. Absolute certainty. Needs no capital. G. M. HANSON, Chicago, Ill.

390 FUNNY SELECTIONS, SCRAP PICTURES, etc., and nice Sample Cards for 2 cents.
HILL PUB. CO., Cadiz, Ohio.

500 SCRAP PICTURES, GAMES, &c., AND Sample Book of Cards, only 2 cents.
STAR CARD CO., Station 15, Ohio.

The Illustrated
STRAWBERRY CULTURIST.

CONTAINING THE
History, Sexuality, Field and Garden Culture, of Strawberries, Forcing or Pot Culture, How to Grow from Seed, Hybridizing, etc.,
TOGETHER WITH
A DESCRIPTION OF NEW VARIETIES, AND A LIST OF THE BEST OF THE OLD SORTS.
By ANDREW S. FULLER,
Author of "The Grape Culturist," "Small Fruit Culturist," "Practical Forestry," etc.
FULLY ILLUSTRATED.
Flexible Covers. PRICE, POST-PAID, 25 CENTS
O. JUDD CO. DAVID W. JUDD, Pres't.
751 Broadway, New York.

OUR "EMPEROR" GUNS 9.50

Guns, (improved) our patrons say are the best breech loaders. Complete Catalogue Free. Don't buy Guns, Rifles, Revolvers, Watches and Sporting Goods until you have our list. We can save you money. We offer a good Double Barrel Breech Loader for only
G. W. CLAFLIN & CO., 54 & 56 Duane St. New York N. Y

THE GREAT AMERICAN TEA COMPANY
GOOD NEWS TO LADIES.
Greatest Bargains in Teas, Coffees, Baking Powder and PREMIUMS. For particulars address
THE GREAT AMERICAN TEA CO., 31 & 33 Vesey St., New York, N. Y.

94 HIDDEN NAME CARDS, scrap pictures, puzzles, games, tricks, money making secrets, album verses, and the largest and finest sample book of new style cards ever issued. All for a 2-cent stamp. Steam Card Works, Station 15, O.

ESTABLISHED 1818.

PORTER BLANCHARD'S SONS,

CONCORD, N. H., U. S. A.,

MANUFACTURERS OF AND DEALERS IN ALL KINDS OF

Dairy Goods

—SPECIALTIES.—

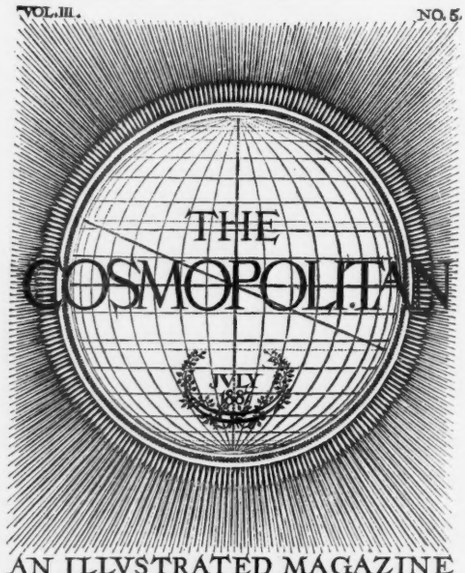
FAMILY DAIRY CHURNS, FACTORY CHURNS, FACTORY BUTTER WORKERS, FAMILY BUTTER WORKERS, BUTTER PACKAGES, PRINT BUTTER CARRIERS, GERMAN DAIRY PAPER,

And everything needed in a complete Creamery or Butter Factory. Send for Circulars and Prices.

PORTER BLANCHARD'S SONS, Concord, N. H., U. S. A.

ESTABLISHED 1818.

VOL. III. NO. 5.



AN ILLUSTRATED MAGAZINE
PUBLISHED EVERY MONTH
TWO DOLLARS PER YEAR TWENTY CENTS PER NUMBER
SCHLICHT & FIELD CO. PUBLISHERS NEW YORK

THE
Cosmopolitan

The Handsomest, Cheapest, and Most Readable Illustrated Magazine in the World.

ONLY 20 CENTS A COPY, $2 A YEAR.

A LITERARY SENSATION.
The Greatest Work of a Great Writer to be Published in The Cosmopolitan.
GEORGE SAND'S
"Princess Nourmahal."

Look out for the First Chapters of this Stirring Romance in the October Number,
NOW PUBLISHED FOR THE FIRST TIME.

AGENTS WANTED, MALE AND FEMALE, to whom we will pay a good SALARY AND COMMISSION. Some of our Agents earn $200 per month. Send for Sample Copy.

SCHLICHT & FIELD CO., Publishers,
29 Park Row, New York City.

PENSIONS For Mexican War and Union Veterans.
MILO B. STEVENS & CO.,
Washington, Cleveland, Detroit, and Chicago.

MEN AND WOMEN of intelligence, desiring to improve their condition, can do no better than by engaging with us, and acting as agents for some of our fast selling works. The inexperienced will RECEIVE such INSTRUCTIONS which, if followed, will make SUCCESS CERTAIN. Whole time, or leisure hours only, may be profitably devoted to the work. It COSTS NOTHING to learn the full particulars of our offer. Don't neglect this opportunity. Apply at once. GEORGE WILLIAMS, Box M., Station D, New York.

PATENTS PROMPTLY SECURED. Send for book of information on patents, trade-marks, copyrights, &c. W.B.Bellows, 21 Park Row, N.Y.

$1.00 Type Writer. The Jewelers' Mercantile Agency, New York and Chicago, have used 27 of them for 3 years. Durable, Labor-saving, Ingenious. Catalogue Free. H. S. INGERSOLL, 46 Cortlandt St., N. Y.

BOOKS FOR FARMERS, MECHANICS AND Engineers. Catalogue free. Monthly List sent *regularly* if desired.
E. & F. N. SPON, 35 Murray Street, New York.

ADVERTISING RATES.

American Agriculturist.

ENGLISH EDITION.

Ordinary Pages, **$1.00** *per line* (agate), each insertion.
Last Page, and Third Cover Page, **$1.25** *per line.*
Second Cover Page—**$1.50** per line.
Page next to Reading and Last Cover Page—**$2.00** per line.
No advertisement taken for less than **$3.00** each insertion.
Fourteen agate lines make one inch.

GERMAN EDITION.

Ordinary Pages, **10** cents per line, each insertion.
Second Cover Page, **15** cents per line.
Page next to Reading and Last Cover Page, **20** cts. per line
No advertisement taken for less than **$1.00** each insertion.
☞ No Advertisement of Medicines or Humbugs received.

AMERICAN AGRICULTURIST,
751 Broadway New York.